



Australia's Native Vegetation Framework

A NATIONAL FRAMEWORK TO GUIDE THE ECOLOGICALLY SUSTAINABLE MANAGEMENT OF AUSTRALIA'S NATIVE VEGETATION

COAG STANDING COUNCIL ON ENVIRONMENT AND WATER

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Main cover image:
Majura paddock bathed in evening light (Photo by Tristan Armstrong, Friends of Mount Majura)

Front cover images:
From top left to right: Watering seedling to aid survival through drought period on Mt Macdonald, ACT (Photo by Andrew Tatnell); Close up of flowering Acacia at Boyagarra Pool on the Avon River, WA (Photo by Michael Marriott); Discussing successful tree planting on property east of Cowra, NSW (Photo by John Baker); *Eucalyptus macrocarpa* in full flower, in paddock at edge of remnant vegetation in the Avon NRM region (Photo by Michael Marriott); Checking the remains of an old Indigenous fire site on Stratford Station, near Blackall, QLD (Photo by Dragi Markovic).

Back cover images
From top left to right: Un-named species germinating on farm near Dumbleyung, WA (Photo by Michael Marriott); *Hakea obtusa* in the Ravensthorpe Connection, WA (Photo by Amanda Keesing); Nantawarrina Indigenous Protected Area, SA (Photo by Nick Rains); Kingia in Stirling Range National Park, WA (Photo by Amanda Keesing); Collecting Prickly Tree plants for revegetation in forestry corridor near Millicent, SA (Photo by Dragi Markovic).

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Ministerial Council Foreword

Australia's native vegetation is crucial to a healthy and biodiverse Australian landscape. It provides essential ecological goods and services and supports our economy and the productivity of many industries. Our native vegetation also underpins our cultural identity as a nation: it continues to play an important role in the relationship of Indigenous peoples with country — their traditional lands and waters — and in the lives of the many Australians who enjoy the wonder and beauty of our natural environments.

The Council has now released *Australia's Native Vegetation Framework* as a national policy and call for action to achieve the sustainable management of Australia's native vegetation. It provides strategic guidance for the next steps forward, recognising the essential role that native vegetation plays in conserving and promoting a biodiverse and thriving natural landscape and our shared responsibility to manage and protect it.

This framework updates the 2001 *National Framework for the Management and Monitoring of Australia's Native Vegetation* and adapts our national approach to emerging priorities and pressures on our land environment. It will also better enable us to plan for and manage the changes to native vegetation and production systems that are expected through climate change.

The framework has been developed by a cooperative effort between all Australian Governments, and expresses their commitment to improving the national condition of native vegetation. Victoria supports the Framework in-principle and is not opposed to setting national directions relating to native vegetation management. However, Victoria is currently reviewing the state native vegetation regulations and the Victorian Minister for Environment and Climate Change is not in a position to consider endorsing the Framework until the Victorian review is complete. Australian Governments will work together to implement the framework as well as to monitor and report on progress towards its goals and targets. It supports *Australia's Biodiversity Conservation Strategy 2010–2030* by translating the strategy's principles, priorities for action and targets into specific goals and targets for native vegetation.

The framework provides information on how government, the private sector and the community can work together to improve the health and condition of Australia's native vegetation. It also provides a means to monitor and evaluate our progress. The framework's vision will be achieved when our combined efforts result in an Australian landscape that maintains and promotes healthy, diverse and connected native vegetation communities which are resilient to change. This will be for the long-term benefit of all Australians.

COAG Standing Council on Environment and Water

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Peppermint box woodland on private property near Murray Bridge, SA (Photo by Andrew Tatnell)

Executive Summary

Australia's Native Vegetation Framework will guide native vegetation management across the Australian landscape. The vision of the framework is that native vegetation is managed in an ecologically sustainable way that promotes its enduring environmental, economic, social, cultural and spiritual values.

The framework recognises that native vegetation is crucial for the health of Australia's environment, that it supports our economy and productivity as well as our biodiversity and that it is embedded within Australia's cultural identity. Our native vegetation is unique and diverse and has adapted specifically to cope with Australia's climate, nutrient-depleted soils and fire.

Australia's Native Vegetation Framework is an initiative of the COAG Standing Council on Environment and Water, which comprises representatives of each of the state and territory and Australian governments. It updates the 2001 *National Framework for the Management and Monitoring of Australia's Native Vegetation* to guide and coordinate legislation, policies, programs and activities related to native vegetation management throughout the country. The framework is intended not only to guide the actions of governments but also to encourage and support the active involvement of the community and the private sector.

Although Australia retains much of the estimated original extent of native vegetation cover, its condition is variable and masks an underlying issue in the decline of many ecological communities. Vegetation clearance has not been evenly spread across Australia and, consequently, some individual vegetation communities now occupy less than one per cent of their original estimated extent and many others are highly fragmented. In some cases the threats to the condition and extent of these and other native vegetation communities are ongoing. Concerted action will be required to reduce this decline, especially as this is a challenge that is likely to be further complicated by climate change.

Serious consequences resulting from the loss and degradation of native vegetation may include biodiversity decline, dryland salinity, declines in river and wetland health, reduced water quality and quantity, difficulty in flood control, increased erosion, increased greenhouse gas emissions, reduced ecosystem functioning, decline in ecosystem resilience, reduced productivity and impacts on cultural and spiritual identity.

The loss and degradation of native vegetation is an ongoing threat to biodiversity and to the productivity of industry. Agriculture, forestry and fisheries and tourism rely on productive and healthy native vegetation ecosystems and continue to provide great value to Australia's economy and national development. Native vegetation not only underpins many social and economic aspects of Australian society but also plays a crucial role in sustaining ecosystem function and processes such as maintaining our soils and purifying our streams.

Central Kimberley landscape, WA (Photo by Bruce Rose)

In the past decade, all Australian governments and the community have invested significantly in the sustainable use and conservation of native vegetation. For Indigenous Australians, who have managed and utilised native vegetation for tens of thousands of years, the land continues to play a profound spiritual, cultural and economic role. Many land users and managers across Australia value native vegetation and its role in maintaining the long-term productivity of their land. Industries have also undertaken activities to enhance and protect native vegetation.

Nevertheless, further action is needed from all land users and managers — public and private — to build on previous achievements and ensure healthy and resilient native vegetation is retained over the Australian landscape in the long term. Australia's Native Vegetation Framework recognises these efforts and achievements, and encourages continued and advancing work towards the sustainable management of native vegetation.

This framework sets out five goals to meet its vision:

Goal 1 Increase the national extent and connectivity of native vegetation

Goal 2 Maintain and improve the condition and function of native vegetation

Goal 3 Maximise the native vegetation benefits of ecosystem service markets

Goal 4 Build capacity to understand, value and manage native vegetation

Goal 5 Advance the engagement and inclusion of Indigenous peoples in management of native vegetation.

These goals are designed to build ecosystem resilience and to improve the productive capacity of the landscape. Each of these goals is supported by desired outcomes and targets, so that governments, community organisations and interest groups have a clear focus for progress and implementation. The targets are measurable and strategic, designed to provide a way to measure our progress towards each of the goals.

The framework is not prescriptive or binding, but acts as a strategic document to promote better management of Australia's native vegetation while acknowledging differences in approach and activity between jurisdictions. At the government level, implementation of the framework will be formally coordinated through the COAG Standing Council on Environment and Water, which represents all states and territories and the Australian Government. Consolidated reports will be published periodically under the implementation plan. While implementation of the framework's goals and targets will be monitored and reported on by government, the contributions and achievements of all Australians through the actions of the community, industry and individuals will be fundamental to its success.

A website with additional resources to supplement this framework can be found at: *www.environment.gov.au/nvf*

Purpose of Australia's Native Vegetation Framework

Australia's Native Vegetation Framework sets national directions to guide actions across government strategies, policies, legislation and programs related to native vegetation management on the Australian continent and its islands.

The framework, and the associated resources available on the supporting website, is intended not only to guide the actions of governments but also to encourage and support the active involvement of the community and the private sector. This includes the approaches taken by natural resource managers regionally, catchment-wide and locally, non-government organisations and individual land users and managers.

The framework is not prescriptive or binding, but acts as a strategic document to promote better management of Australia's native vegetation while acknowledging differences in approach and activity between jurisdictions. It updates the 2001 *National Framework for the Management and Monitoring of Australia's Native Vegetation* (NRMMC 2001).

This framework recognises past efforts and achievements, and encourages continued and advancing work by providing a strategic context for vegetation management and promoting collective action towards the sustainable management of native vegetation. It provides common national goals, to assist land users and managers in undertaking individual actions that contribute to a national outcome. It provides a way to clearly identify where we are now, what we are doing right and what needs more work, where we hope to head as a society and ways in which we can work together to achieve our vision.

This framework also aims to support *Australia's Biodiversity Conservation Strategy 2010–2030* (NRMMC 2010a), by translating the strategy's principles, priorities for action and targets into specific goals and targets for native vegetation.

This framework does not deal in detail with principles for forest and plantation management, or the management of the national reserve system. These are covered in the *National Forest Policy Statement* (Commonwealth of Australia 1992) and *Australia's Strategy for the National Reserve System 2009–2030* (National Reserve System Task Group 2009) respectively. However, this framework has been designed to be complementary and consistent with these policies, as well as other related policies and legislation, for example: the *Australian Pest Animal Strategy* (NRMMC 2007b); *Australian Weeds Strategy* (NRMMC 2007a); *Principles for Sustainable Resource Management in the Rangelands* (NRMMC 2010b);

and the conservation and biodiversity policies in each state and territory. For a summary of related international, national, Australian Government and state and territory government policies, refer to Appendix 1. The framework also links to related Australian Government programs, such as Caring for our Country (*www.nrm.gov.au*); Clean Energy Future (*www.cleanenergyfuture.gov.au/clean-energy-future/our-plan*); and Sustainable Australia — Sustainable Communities (*www.environment.gov.au/sustainability/population*).

Role of government

This framework is designed to provide a mechanism for progressing and achieving national objectives for native vegetation management in a consistent and coherent manner. All Australian governments have committed to the goals and targets of the framework and are responsible for deciding on the mechanisms appropriate for meeting them, relative to their individual circumstances and requirements.

Active and ongoing consultation between the various levels of governance and across state and territory jurisdictional borders will be necessary to achieve the framework's objectives. Each jurisdiction will need different mixes of management and monitoring mechanisms. As such, the framework is intended to have a broad scope and apply across the landscape — inclusive of environmental, social and economic values and outcomes. Additionally, as there are increasingly shared responsibilities across the three levels of government, the role of local government in planning, environmental management, recreation, regional development and human services needs also to be considered.

This framework acknowledges that people will be the primary drivers of change in achieving improved management of native vegetation. The Australian Government is responsible for coordinating this national approach to native vegetation management, as an issue of national and international significance. The states and territories have primary responsibility for native vegetation management and land use decisions. Local, state and territory governments and the Australian Government will be responsible for coordinating, facilitating and promoting positive outcomes for native vegetation management within their jurisdictions. In most jurisdictions, local governments are responsible for local land use planning that affects native vegetation management and are also significant landholders and managers in their own right. The role of natural resource management bodies differs between jurisdictions, but they also play an important part in working towards achieving the goals and targets of the framework.

*Kangaroo Grass (*Themeda australis*) on Carnarvon Station, QLD (Photo by Dragi Markovic)*

Role of the community and private sector

All Australians can contribute personally to native vegetation management and biodiversity conservation actions that will help to achieve the goals, outcomes and targets of the framework.

Individuals, non-government organisations, community groups and the private sector can contribute to achieving the goals of the framework by:

- learning more about native vegetation and its importance; participating in or supporting training and education to maximise the knowledge and understanding of good native vegetation management and the need for it
- supporting and investing in businesses, industries and private/public partnerships that prioritise and demonstrate good native vegetation management and biodiversity conservation
- actively participating in best practice management, revegetation and restoration of native vegetation as a landholder, land manager, individual or community group member
- following the appropriate guidelines, planning and legislative requirements when considering actions that may affect the extent and condition of native vegetation (for example land clearing, firewood collection, changing land management practices, harvesting native vegetation, etc).

Individuals and organisations can contribute through many different avenues and opportunities. The case studies contained in the framework and on the accompanying website may provide some ideas and inspiration. The value of input from the general community should not be underestimated. For example, in 2009–2010, nearly 4000 individual volunteers contributed time worth more than $2 million to activities in partnership with the Tasmanian Parks and Wildlife Service (State of the Environment 2011 Committee).

Tree plantings on the raised shoreline at the Kitty Miller Wetlands, Phillip Island, VIC (Photo by John Baker)

Declared Rare Flora species, Verticordia hughanii*, near Dowerin, WA (Photo by Michael Marriott)*

Indigenous peoples currently manage approximately 23 per cent of Australia's land area (State of the Environment 2011 Committee) and Indigenous communities are therefore important active partners in the long-term sustainable management of native vegetation. Indigenous peoples and communities can contribute to all of the framework goals and targets, including as an Indigenous community, as individuals, as members of other community groups and as part of the private sector.

The private sector includes all industries linked directly and indirectly to the land. It makes most of the development and investment decisions that affect private lands, and extensive areas of public land, and so is fundamentally important to achieving the goals of the framework. Industries particularly aligned with native vegetation management include forestry, agriculture, pastoralism, mining, tourism and land and urban development industries. Other industries can, however, also take action. Farmers and graziers, who manage significant areas of Australia, are particularly important to achieving good outcomes for native vegetation management.

The scientific research and education sectors also have an important role to play in developing and communicating knowledge resources on native vegetation. This includes informing best management practices and adaptive management approaches to native vegetation that can be used by government, industry and the community to respond and adapt to climate change and other drivers of landscape change.

Vision and principles for Australia's Native Vegetation Framework

The framework's vision

Native vegetation across the Australian landscape is managed in an ecologically sustainable way in recognition of its enduring environmental, economic, social, cultural and spiritual values.

This vision will be achieved when our efforts towards the goals of the framework result in an Australian landscape that maintains and promotes healthy, diverse and connected native vegetation communities. This will, in turn, provide environmental, social and economic benefits for all Australians.

Principles underlying the development and implementation of the framework

1. Vegetation is vital for life on earth; its conservation is fundamental to our survival.
2. Native vegetation provides essential ecosystem services and is a crucial component of our nation's biodiversity.
3. Australia's native vegetation is important to our national identity and integral to the relationship of Indigenous peoples with country — their traditional lands and waters.
4. People play a significant role in the management of native vegetation; particularly private and leasehold land managers and Indigenous Australians as custodians of large land areas across Australia.
5. Australia's ongoing socio-economic status, sustainable development potential and major industries are intricately linked to healthy, functioning native vegetation and the ecosystem services it provides.
6. Our natural resources are finite and require careful management to promote sustainable use that conserves biodiversity and builds the resilience of ecosystems.

7. Investment in native vegetation management should be ecosystem-based, strategic, efficient and cost–effective, while taking into account species conservation and threat management.

8. Tackling the underlying reasons for native vegetation decline requires active management of adverse cumulative and long-term impacts, recognising prevention as being more effective than rehabilitation.

9. Our environment is continually changing, accelerated by human activity and impacts of climate change, which result in changes to the composition, structure and functioning of native vegetation. Adaptive management principles will help ensure the best possible management practices are implemented under changing circumstances, including access to new knowledge.

10. Knowledge about the value and management of native vegetation, including Indigenous knowledge, should, where culturally appropriate, be widely disseminated and used to improve native vegetation management.

11. Native vegetation management should adopt an integrated approach that considers both long-term and short-term environmental, economic and social considerations consistent with the principles of ecologically sustainable development.

12. As part of such an approach, a decision-making hierarchy should be applied to native vegetation management where the first aim is to avoid loss; and, if that is not possible, to minimise loss; and if vegetation loss is unavoidable, impacts should be managed to maintain biodiversity values and ecosystem function.

13. Decision-making concerning native vegetation management should utilise the best available knowledge and scientific research; applying the precautionary principle where knowledge is incomplete.

Spinifex hill in the Central Kimberley, WA (Photo by Bruce Rose)




Photo credits from left to right: Cameron Slatyer, Dragi Markovic, Cameron Slatyer, Lochman Transparencies, Sally Greenaway

1 Setting the context

1.1 Australia's native vegetation

1.1.1 What is native vegetation?

For the purpose of this framework, native vegetation is all indigenous terrestrial or aquatic plants in an area, incorporating all living and non-living components. This includes Australia's diverse natural vegetation and permanent native plantings for biodiversity and sustainable land management purposes[1].

Assemblages of native plant species can be classified hierarchically, from broad vegetation types to more detailed associations and ecological communities, based on their characteristic structure and composition. Broad vegetation types include rainforests, eucalyptus forests and woodlands, other forests and woodlands, and shrublands and grasslands. An ecological community includes the animal, fungal and microbe components, as well as the plants.

1.1.2 Why is native vegetation important?

Australia's native vegetation is extraordinarily diverse, rich in species and complexity and has many unique physical features. Native vegetation is a vital component of the nation's biodiversity with about 85 per cent of Australia's plant species endemic to the continent. Australia's biodiversity depends upon the condition and extent of native vegetation and the ecological communities it supports. Native vegetation also plays a crucial role in sustaining ecosystem function and processes, buffering the impacts of harsh and extremely variable climates, binding and nourishing soils, cleansing the air and filtering streams and wetlands.

Steam Engine Swamp rookery, Yanga National Park, NSW (Photo by Paul Doyle)

1 This definition is significantly based on a report by Williams (2010a)

Wildflowers at Mount Hotham, VIC (Photo by Trevor J Ierino)

Economically, native vegetation and its direct soil and water functions support the productive capacity of many important sectors of the Australian economy — agriculture, forestry, fisheries and aquaculture and tourism. There will also be other economic opportunities associated with native vegetation as they are discovered, documented and explored in the future. Native vegetation management, including restoration and revegetation, has the potential to generate significant employment and enterprise development opportunities for rural and regional Australians, including Indigenous peoples.

Native vegetation shapes the Australian culture and national identity and is an integral part of many Australians' lives. Its healthy condition is important for many people's identity and wellbeing. Native vegetation provides us with a way to connect with nature and contributes to our emotional and spiritual health. For Indigenous Australians, the land and its resources have underpinned Indigenous history, innovation, culture, spirituality and economics for tens of thousands of years through a continuing intrinsic connection to the landscape, which includes a cultural responsibility for its care.

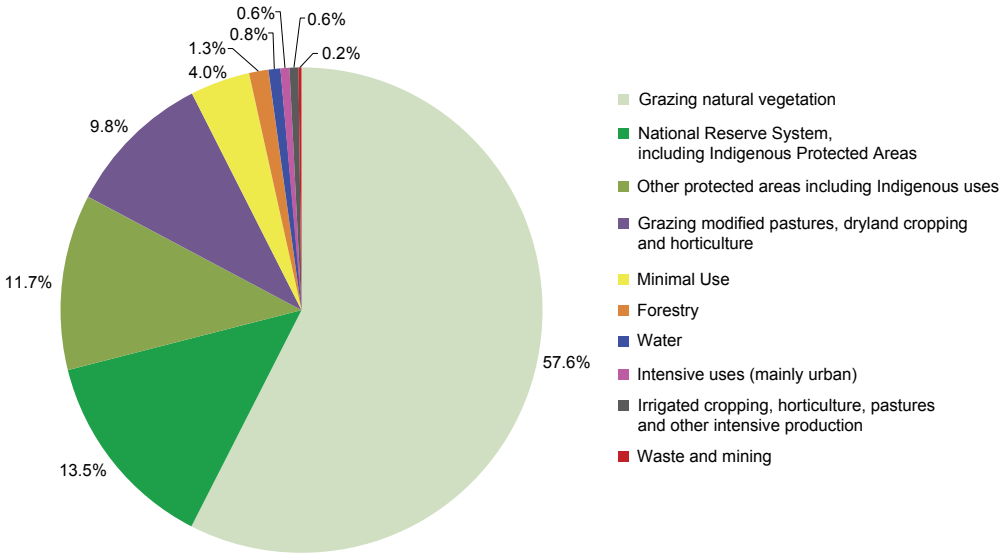
Native vegetation is of great value to all Australians. Conversely, there are potentially serious consequences resulting from its loss and degradation. These may include biodiversity decline, dryland salinity, declines in river and wetland health, reduced water quality and quantity, difficulty in flood control, increased erosion, increased greenhouse gas emissions, reduced ecosystem functioning, decline in ecosystem resilience, reduced productivity and impacts on cultural and spiritual identity.

1.2 The current record

1.2.1 The current extent and condition of native vegetation

Native vegetation in many parts of Australia has been cleared or has become degraded and fragmented due to human activity. The *Australia state of the environment 2011* report tells us that 13 per cent of the original estimated extent of Australia's native vegetation has been completely converted to other land uses, predominantly agriculture, and a further 62 per cent has been subject to varying degrees of disturbance and modification (State of the Environment 2011 Committee). Only around 25 per cent of the original estimated extent of native vegetation remains intact. Figure 1 illustrates the dominant land uses in Australia.

Figure 1 Land Use in Australia

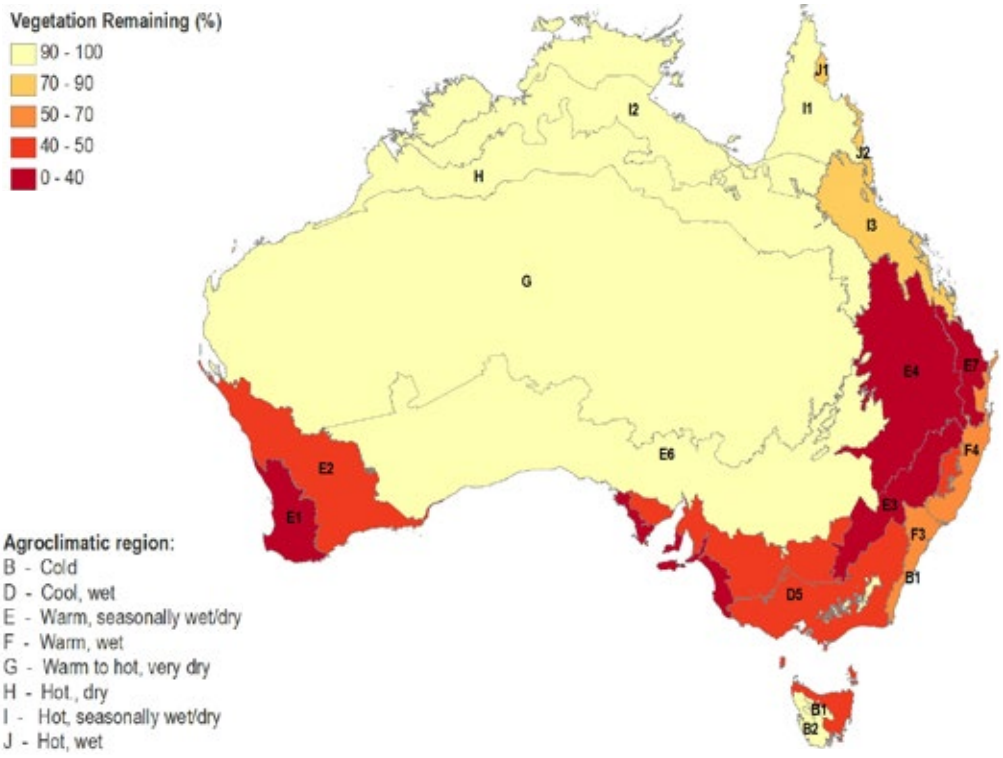


Source: ABARES-BRS 2010

Historically, large areas of land were cleared for agricultural purposes and also for mining, housing, roads and industry. This contributed to the economic development of Australia. Vegetation clearance and modification has not been evenly spread across Australia and, consequently, some individual ecological communities now occupy less than one per cent of their original estimated extent, while many others are highly fragmented. Figure 2 shows the percentage of native vegetation remaining by agroclimatic region. Over time, land management practices have changed and improved as we have recognised and sought to

redress the negative environmental and productivity consequences of extensive land clearing and the decline in condition of native vegetation. As a result of these changes in our attitude towards our environment and land capability, at the national scale, the rate of vegetation clearing has decreased in recent years in many states. Nevertheless, declines in vegetation extent and condition, and further fragmenting of vegetated habitat in some areas and regions, highlight the need for ongoing action.

Figure 2 Percentage of Australian native vegetation remaining, by agroclimatic region. Figures indicate agroclimatic categories, numbers indicate subcategories for each region.

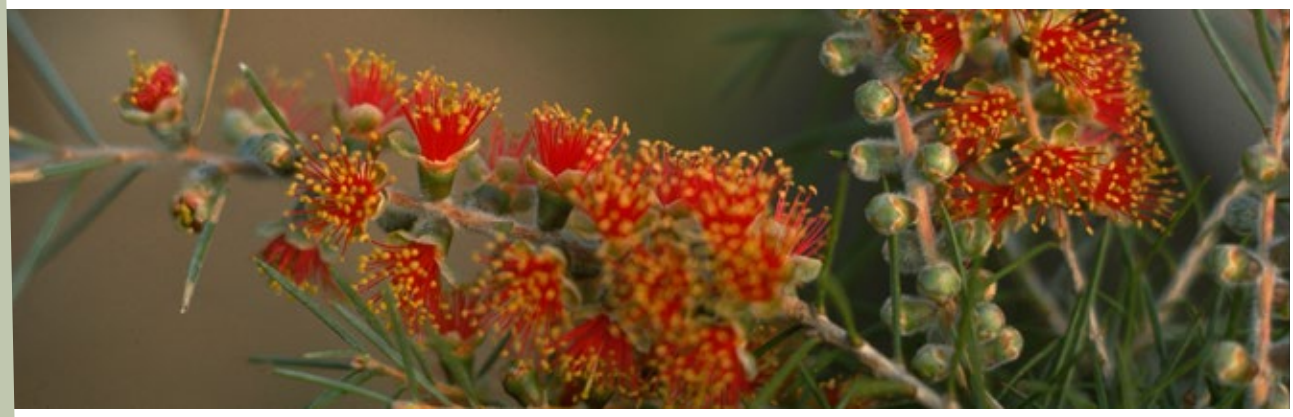


Source: Hutchinson et al., 2005; State of the Environment Committee 2011

Clearing and degradation of native vegetation remains an ongoing threat to the health of Australia's environment and the resilience of our ecosystems. Additionally, total grazing pressure (the combined effect of grazing by all animals) can place heavy stress on soils, vegetation and terrestrial and wetland habitats, especially in sensitive areas (Beeton et al. 2006). Grazing impacts on environmental values are decreasing in some regions but increasing in others (State of the Environment 2011 Committee).

Estimated changes in vegetation types and cover since European settlement can be seen by comparing Figures 3 and 4; maps compiled using data from the National Vegetation Information System (NVIS). NVIS has been developed and maintained by all Australian governments to provide a national picture that captures and explains the broad diversity of our native vegetation. It includes data on major vegetation groups including estimated pre-1750[2] extent, current extent and areas protected in reserves (Figure 5).

2 The term 'pre-1750' while not corresponding exactly with the year of European settlement in Australia, is used for NVIS because of its international usage in greenhouse science and vegetation monitoring to describe the time just prior to industrialisation.



Callistemon brachyandrus (Photo courtesy of the Australian National Botanic Gardens)

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. Peri-urban and urban development within these zones has steadily increased and has resulted in the significant fragmentation and degradation of native vegetation. Vegetation clearance across Australia shown in Figure 2 can be clearly seen to fit with areas of intensive agricultural and urban development. The area of native vegetation clearance across Australia also broadly corresponds to the distribution of many nationally threatened species, suggesting a relationship between land clearing and biodiversity loss (NRMMC 2010a).

Vegetation outside the intensive land use areas has also been significantly affected by human activity. A major part of the continent (81 per cent of the land area) is referred to as rangelands — popularly known as "the outback" — and is the zone of extensive land use. The condition of the rangelands is highly variable — with many areas still intact but some degraded — and baseline knowledge is limited. The report *Rangelands 2008 — taking the pulse* (Bastin & ACRIS Management Committee 2008) found that the landscape's capacity to capture and retain rainfall and nutrients (an indicator of condition and resilience) increased or remained stable between 1992 and 2005. However, the report also states that rangelands biodiversity is substantially declining with many native species affected by loss or changes to vegetation cover. This can be attributed to a range of factors, including climate variability, fire, invasive species and significant total grazing pressure (the combined effect of grazing by all animals).

The *Australia state of the environment 2011* report provided a broad summary of the condition of native vegetation in Australia. Outside the intensive land use zones, native vegetation has experienced a relatively small degree of modification and received a 'good' overall rating (which means that the environmental values of native vegetation are suboptimal, but community structure, composition and regenerative capacity are intact). Within the intensive land use zones, native vegetation has been significantly modified and received a 'poor' overall rating (the environmental values of native vegetation are significantly compromised and unlikely to recover without intervention). It is important to acknowledge the obvious exceptions to the summary. Outside the intensive land use zone there are sizeable areas of significantly modified native vegetation. Conversely, within the intensive land use zone, some areas of vegetation are still in good condition, such as significant areas

of native forest, national parks and other reserves. The report also assessed the condition of native vegetation to be on a declining trend overall.

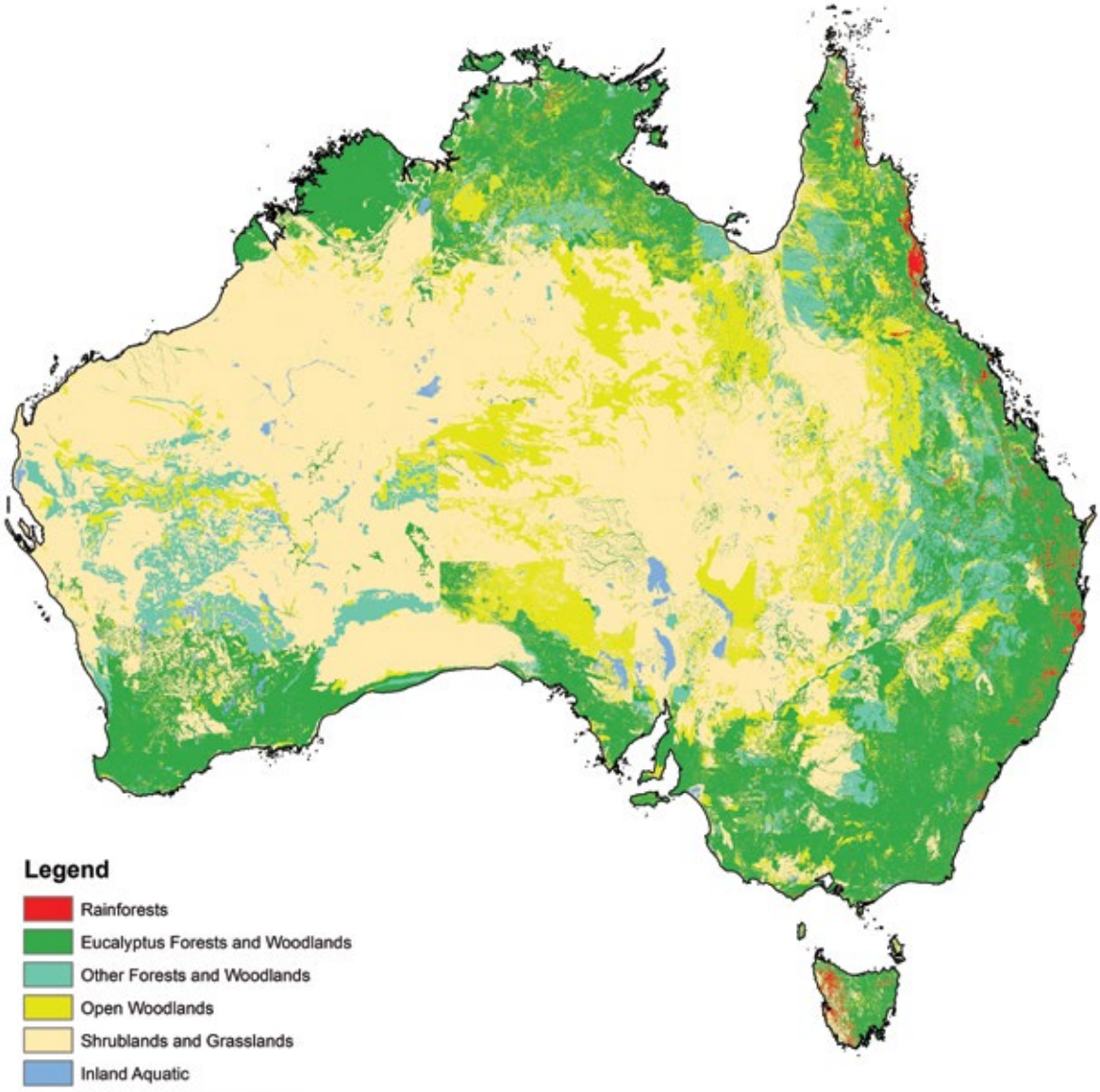
The report also found that there have been significant changes in land use trends since 2000:

- Over the decade, terrestrial conservation estates expanded by more than 50 per cent to nearly 100 million hectares. This includes a rapidly growing area dedicated to, and managed for, conservation by private owners (e.g. conservation trusts). The extent of private conservation lands now sits at more than four million hectares.
- The land owned or managed by Indigenous Australians also continued to increase to 23 per cent of the Australian land area.
- The millennium drought in southern Australia during 2000–2010 had a profound impact on agricultural industries. The result was a decrease in agricultural production. The sophistication of agricultural land management also increased. This included more flexible approaches to grazing management to reduce erosion and increase productivity.
- The use of land management for carbon sequestration also became a mainstream interest for industries and governments; biosequestration may have very large impact on future rural land use and management.
- In the built environment, Australian cities and coastal settlements continued to sprawl.

While this summary provides a national indication of the current extent and condition of native vegetation, it must be recognised that there are limitations to obtaining accurate detailed measurements of regional and local native vegetation extent and particularly condition across Australia. Data is important for monitoring the extent, condition, connectivity and function of native vegetation, and to support potential markets for ecosystem services. Consequently, all state and territory governments, as well as a range of research and non-government bodies, have ongoing programs for assessing, classifying and mapping vegetation. In the future, such systems will be able to record increasing levels of detail on both extent and condition.

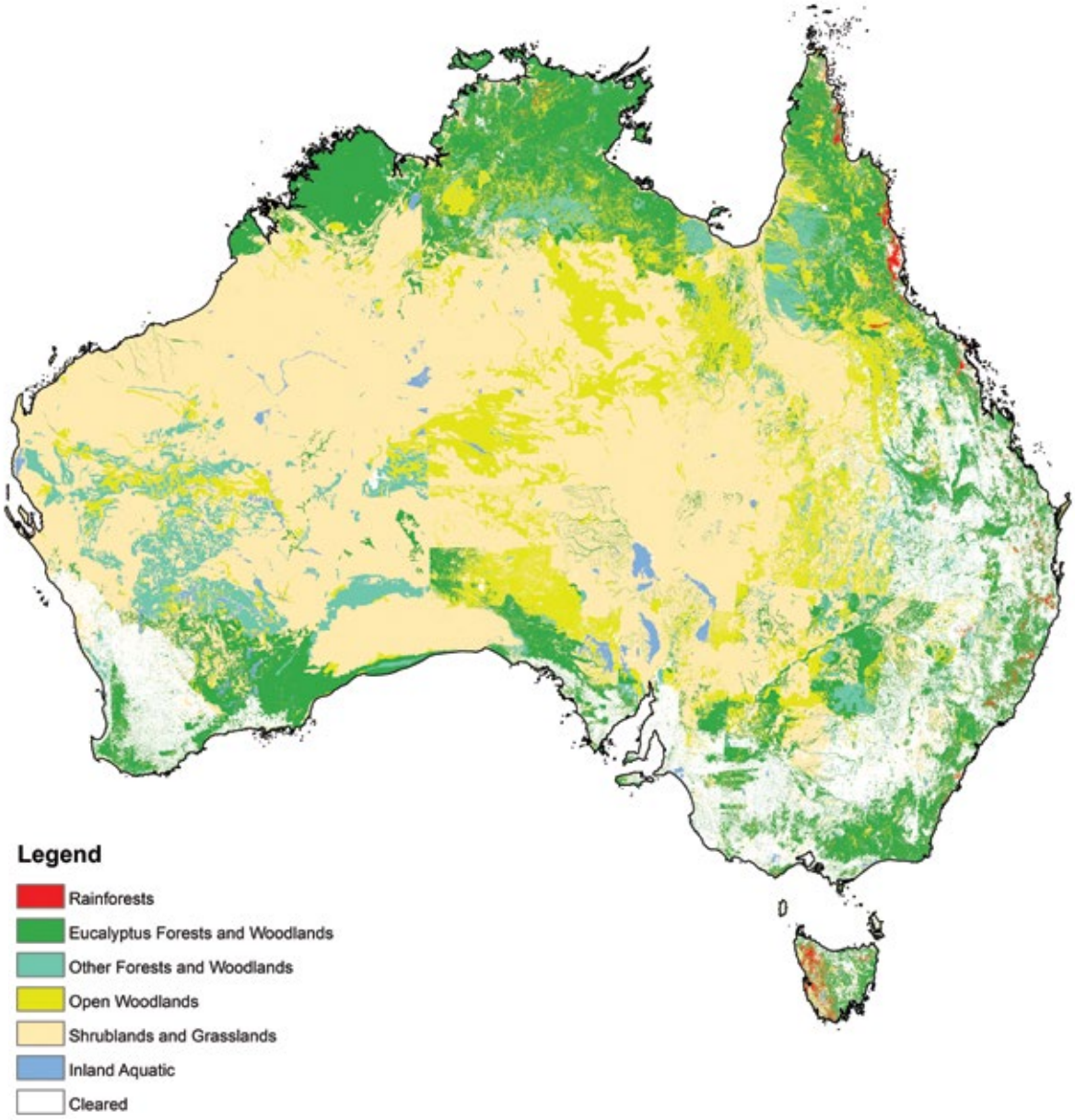
Coastal growth at Barilla Bay, TAS (Photo by Nick Rains)

Figure 3 Estimated pre-1750 extent of broad native vegetation types (data derived from the National Vegetation Information System (NVIS)).



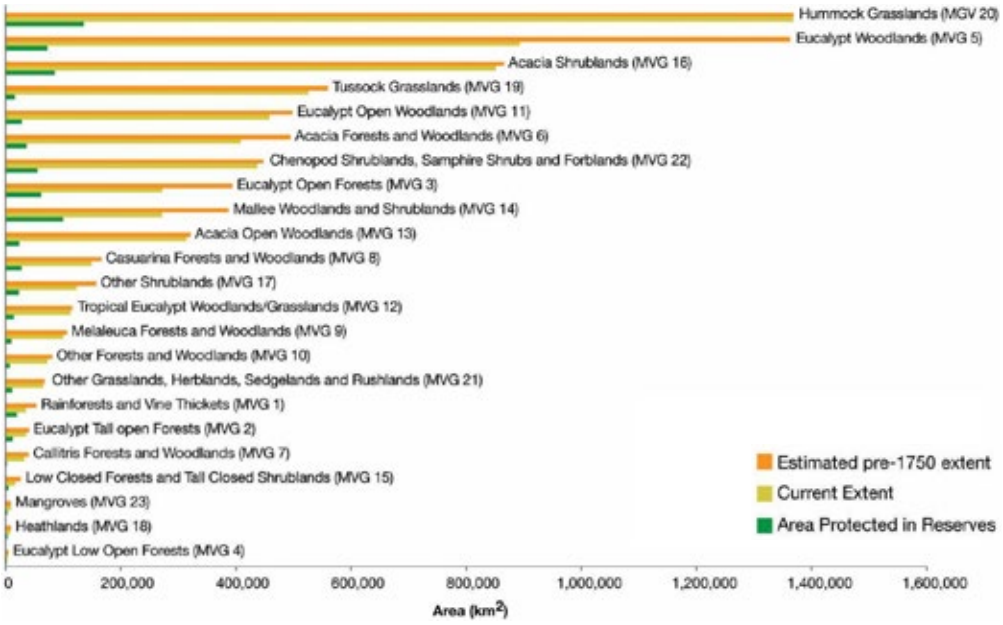
Source: The vegetation types displayed above are an amalgamation of the Major Vegetation Groups identified within Australia's Native Vegetation: A summary of Australia's Major Vegetation Groups, © Commonwealth of Australia (2007).

Figure 4 Estimated current extent of broad native vegetation types (data derived from NVIS).



Source: The vegetation types displayed above are an amalgamation of the Major Vegetation Groups identified within Australia's Native Vegetation: A summary of Australia's Major Vegetation Groups, © Commonwealth of Australia (2007).

Figure 5 Areas of estimated pre-1750 extent, current extent and protection of Major Vegetation Groups (as described by NVIS) in Australia, as at 2001–2004.



Source: Department of the Environment and Water Resources 2007.

Eucalypt open woodlands (Photo by M. Fagg, Australian National Botanic Gardens)

Murchison Gorge, Kalbarri National Park, WA (Photo by Allan Fox)

1.2.2 Achievements so far

In the past decade, all Australian governments and the broader community have invested significantly in policies and programs for the sustainable use and conservation of native vegetation. All jurisdictions have made significant achievements in native vegetation management under the 2001 framework which emphasised a 'duty of care' approach to native vegetation.

Likewise, many land managers, non-government organisations, businesses, and community groups have long recognised the broad range of benefits that can arise from native vegetation including its importance for biodiversity, ecosystem health and sustainable production. They have invested significant time, effort and resources in improving the condition and extent of vegetation across private land, innovating, sharing existing and gathering new knowledge, and leading by example. National, state and territory and local governments, to a varying degree, have been providing guidance, support, and coordination through native vegetation policies and programs. An example of such a program can be seen in Case Study 1.

Land managed for agriculture includes a significant component of Australia's biodiversity assets. Australian farmers and pastoralists occupy and manage 60 per cent of Australia's land and make a large contribution to conserving and enhancing native vegetation. Estimates from the Australian Bureau of Statistics' Agricultural Resource Management Survey data in 2009–10 showed that, of the 65 per cent of all agricultural businesses that reported having native vegetation on their holding, more than half protected their native vegetation for conservation purposes. Over the period 2007–08 to 2009–10, the estimated number of businesses protecting these assets increased, by four per cent for native vegetation, 12 per cent for wetlands and six per cent for rivers and creeks (Australian Bureau of Statistics 2009, 2011). As well as retaining existing native vegetation, farmers, pastoralists and landholders protect native vegetation by excluding or controlling livestock access, planting or seeding native

Doctors Point Swamp in the Barmah State Forest, VIC (Photo by John Baker)

species, and undertaking weed and feral animal management and other activities. A good example of landholders working together to tackle the conservation of native vegetation can be found in Case Study 2.

Farmers improving their natural resource management practices (including the management of native vegetation, weed, pest, land and soil, and water-related problems) do so to increase productivity (88.6 per cent), for farm sustainability (88.4 per cent) and for better environmental protection (74.5 per cent) (Australian Bureau of Statistics 2008).

Case Study 3 is an example of working at the community level to fund the protection and restoration of endangered ecological communities on private land.

Collectively, considerable resources have been invested to protect, maintain and enhance native vegetation for biodiversity and productivity, such as through:

- protection of remnant vegetation, for example, through fencing
- instituting sustainable grazing practices
- revegetation, vegetation rehabilitation and restoration
- legislation to limit broadscale land clearing
- legislative protection and recovery programs for threatened species and ecological communities

- markets to encourage management of native vegetation on private land (for example Case Studies 1 and 3)
- community action to manage and restore native vegetation, including the establishment of many community groups (for example Case Study 2)
- sustainable harvesting of native flora
- improving forestry and forest management practices on both private and public land
- expanding the National Reserve System, including private land conservation covenants, Indigenous Protected Areas and increasing connectivity (for example Case Study 5)
- establishment of the National Vegetation Information System (NVIS)
- policies, programs and initiatives for improving vegetation such as: at the national level, Landcare, Natural Heritage Trust, National Action Plans, Caring for our Country; and, at the state and territory level, a range of programs exemplified by the case study examples included in this framework: ParkCare (ACT), BushBroker (Vic), Biodiversity Banking and Offsets Scheme (NSW), NatureLinks and Bounceback (SA), the Building resilience to climate change into Tasmania's natural systems initiative (Tas), the Ecosystem Management Understanding (EMU) project (NT) and the Northern Kimberley Fire Project (WA).

Despite this multitude of actions and achievements, our native vegetation is still in need of further conservation and management efforts. In 2001 it was acknowledged by all governments that, while significant achievements have been made in all jurisdictions under the 1999 framework[3], increased effort was still required to achieve the national goal of reversing the decline in the quality and extent of Australia's native vegetation cover.

Box gum grassy woodland near Yeoval, NSW (Photo by Andrew Tatnell)

3 *The National framework for the management and monitoring of Australia's native vegetation* (NRMMC 2001) was originally released by ANZECC in 1999. One of the first actions of the NRMMC was to adopt and release this as the 2001 framework.

Snow gums at Crackenback Range, Kosciuszko National Park, NSW (Photo by John Baker)

Many of the threats to native vegetation and condition are ongoing and in some cases increasing, despite our efforts to address them. For example, the *Australia state of the environment 2011* report summarises the continuing pressure of land clearing by concluding that "although land clearing is now balanced by the extent of regrowth, both its immediate and legacy effects continue to threaten environmental values". The rate of woody land clearing in Australia averaged around one million hectares annually over the decade to 2010 and by the end of the decade, the continental extent of land clearing was balanced by the extent of regrowth (State of the Environment 2011 Committee). While this result can be considered an achievement, there is a need to continue our focus on protection of existing native vegetation as well as improving its extent, connectivity and condition. This is because, for example, 'regrowth' vegetation is generally different in many respects (which include its environmental values) from the vegetation that has been cleared (State of the Environment 2011 Committee).

While the actions listed in this section have significantly contributed towards achieving many of the outcomes from the 2001 framework, it did not contain measurable goals and targets or collect base line data to enable quantitative reporting. The current framework includes mechanisms to enable better measurement of future progress towards framework outcomes.

Since the 2001 framework, significant progress has been made in translating high-level concepts of native vegetation management into real and coordinated achievements on the ground.

Case Study 4 provides a good example of how a wide range of stakeholders can work together to achieve healthy functioning ecosystems that will sustain people, industry, culture and native species. Major partners involved in this case study include the South Australian Government, private landholders, community groups, conservation organisations, local councils, Indigenous communities, research institutions and industry bodies.

Case Study 5 demonstrates how supporting Indigenous and other landholders to manage their lands can have positive ecological, socio-economic and cultural outcomes. A cross-cultural, multi-partner approach that is driven by the community can support and best utilise the vast ecological knowledge of Indigenous peoples and their strong cultural ties to the land.

Case Study 1: BushBroker

In Victoria when a permit is granted to remove native vegetation, the applicant is generally required to provide a native vegetation offset. The offset is required to be commensurate with the loss that has occurred, including, in some cases, habitat for threatened species. In order to assist applicants to identify a suitable offset, the Victorian Government launched the BushBroker program in 2006.

BushBroker assists individuals or companies who are required to provide offsets to get in touch with landowners who have suitable native vegetation credits.

Native vegetation credits can be generated in a number of ways including:

- by protecting and managing an area of existing native vegetation
- by protecting and revegetating an area of land
- setting aside an area for regeneration or restoration
- transferring private land to the Crown for inclusion in a park or reserve.

BushBroker matches buyers and sellers and develops the necessary agreements to formalise the trade. Since the program commenced in 2006, BushBroker has finalised over 400 trades totalling more than $30 million. For more information on BushBroker see:

www.dse.vic.gov.au/conservation-and-environment/biodiversity/rural-landscapes/bushbroker

Township of Corryong, VIC (Photo by John Baker)

Case Study 2: Heffernans Creek Landcare Group

In 1996 Russell Erwin, a sheep and beef farmer, noticed that native trees around his house in the Wollondilly catchment were doing well, but nearby bush remnants were dying. Russell and neighbouring landholders Phill Price and Jim Walsh formed Heffernans Creek Landcare Group and began fencing off bush remnants to protect them from stock and encourage plant regrowth. They then planted corridors of native trees and shrubs to link the remnants and were assisted by bodies such as Greening Australia and Australian Government natural resource management funding. The corridors have provided shade and shelter for stock as well as reduced salt scalding. Recently the Landcare group has broadened its membership base through interest from small landholders new to the area and local landholders rebuilding after the drought. Native vegetation conservation will remain a strong theme into the future and the group has found that drawing landholders together with a common interest for natural resource management has had benefits not only for the environment but also for the community, helping bring the district together.

Heffernans Creek Landcare Group, 2007 (Photo by Mary Mulvaney, Hawkesbury-Nepean Catchment Management Authority)

Case Study 3: Caring for Our Country – Environmental Stewardship (Australian Government)

The Environmental Stewardship Program is an element of the Australian Government's Caring for our Country initiative. It focuses on creating markets for the purchase of long-term conservation improvements on private land. Under the program, eligible land managers can receive funding for up to 15 years to undertake agreed conservation management actions. Since 2008, the Environmental Stewardship Program has been working with land managers to protect and restore more than 58 000 hectares of endangered and critically endangered ecological communities. During 2011–2012 the program delivered its second funding round targeting ecological communities in South Australia, building on the earlier program work in New South Wales and Queensland. Environmental assets targeted through the program are matters of national environmental significance listed under the *Environment Protection and Biodiversity Conservation Act 1999*.

For more information on Caring for our Country — Environmental Stewardship Program see: *www.nrm.gov.au/stewardship*

Farmer involved in Environmental Stewardship program protecting peppermint box woodland, Kapunda, SA (Photo by Andrew Tatnell)

Case Study 4: Flinders–Olary NatureLink and Bounceback

NatureLinks is a landscape-scale approach to conserving South Australia's plants and animals by managing and restoring large areas of habitat within broad 'biodiversity corridors'. It provides the overarching framework for stakeholders to work together to restore and manage land and sea between existing conservation areas. Major partners include government agencies, private landholders, community groups, conservation organisations, local councils, Indigenous communities, research institutions and industry bodies. There are five NatureLinks corridors connecting public and private lands across the state, including the Flinders-Olary NatureLink that encompasses an area covering six per cent of the state. The plan for the area provides a vision for a landscape that will sustain people, industry, culture and native species through healthy functioning ecosystems. It represents the first stage to focus efforts of many stakeholders toward common conservation goals that have a positive impact on the economy and the social network of the region.

An example of on-ground implementation within the area is the major ecological restoration program Bounceback. The Bounceback program links conservation efforts, restores ecological processes across the region, removes major threats to biodiversity and demonstrates practical ecological management. Major successes include: a significant increase in yellow-footed rock wallaby populations in areas where active management programs are in place; an improvement in land condition, water quality of springs and native plant communities where grazing pressure has been reduced; a reduction in the impacts of feral goats and foxes through coordinated control programs across a range of land tenures; and the development of good working relationships with landholders and other partners to deliver effective landscape-scale conservation and land management programs.

For more information, see: *www.environment.sa.gov.au/naturelinks/home*

Yellow-footed rock wallaby (photo by Department of Environment, Water and Natural Resources)

Bunyeroo Gorge (Photo by Paul Wainright, Department of Environment, Water and Natural Resources)

Palm trees in the Guanaba Indigenous Protected Area, QLD (Photo by Bruce Rose)

Case Study 5: Kalka Pipalyatjara Indigenous Protected Area

The Australian Government's Indigenous Protected Areas (IPA) program offers support to Indigenous communities across Australia to protect natural and cultural values on their lands through co-management arrangements. In place since 1998–1999, 42 declared IPAs now exist across Australia — covering almost 24 million hectares of Indigenous-owned lands and representing more than 25 per cent of the National Reserve System. Each IPA is actively managed by Indigenous owners, building on the values and knowledge, passion and commitment that Indigenous communities have for their land.

The Kalka Pipalyatjara IPA, in the Central Ranges and Great Victoria Desert Bioregion, is one such example. Located in the north-western corner of South Australia, about 550 kilometres from Alice Springs and covering an area of 578 000 hectares, it adjoins the Northern Territory and Western Australian borders in the Anangu Pitjantjatjara Yankunytjatjara (APY) Lands and makes a significant contribution to the under-represented Central Ranges Bioregion. It creates a significant conservation block extending across borders, linking directly with the Ngaanyatjarra IPA in Western Australia, the proposed Petermann-Katiti IPA in the Northern Territory and Watarru IPA to the south.

A mixture of traditional and western scientific techniques is used to manage the natural and cultural values of the Kalka Pipalyatjara IPA. The communities work alongside the Australian Government and the APY Land Management Unit to manage their country. They also work with the Northern Territory's Central Land Council in cross-border cooperation that extends their land management role across their full traditional estate. Rangers, employed through the Australian Government's Working on Country program, take part in a range of management activities including weed and feral animal control, fencing, cultural heritage conservation, surveying plants and animals and threatened species management such as for the Warru (black-footed rock wallaby), which is critically endangered in South Australia.

As at late 2011, there are 48 Indigenous communities in the process of deciding whether to declare their land as an IPA and a further eight are being supported to negotiate co-management arrangements over existing state parks and reserves. Every IPA makes an important contribution. These areas provide economic benefit to traditional communities, supports social cohesion and the ongoing education through the intergenerational transfer of traditional ecological and cultural knowledge and add to Australia's network of parks and reserves. IPAs are delivering valuable ecosystem services for all Australians by adding to Australia's network of parks and reserves and providing protection for the unique natural and cultural values of these often remote and ecologically valuable locations.

For more information please see: *www.environment.gov.au/indigenous/ipa/declared/kalka.html*

Part of the Central Ranges in the Ngaanyatjarra Lands Indigenous Protected Area, WA
(Photo courtesy of the Department of Sustainability, Environment, Water, Population and Communities.)

1.2.3 Threats to native vegetation

A range of factors threaten the extent and condition of remaining native vegetation, and related ecosystem function and productivity. Many of these threats are the same as those identified in the 2001 framework, implying that we need to further build on past efforts in order to overcome them, as well as emerging challenges such as climate change.

Threats vary across the country. However, key threats facing all Australian native vegetation include:

- **Loss, fragmentation and degradation of habitat** — habitat loss and fragmentation 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 entire plant species and the wildlife species that rely on them.

- **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. It can also lead to land use intensification and pressure to clear more vegetation.

- **Invasive species** — introduced plants and animals, pathogens and diseases, such as rabbits, blackberry and *Phytophthora*, threaten the survival of many of Australia's native plants. They can cause habitat destruction, disturbance to the balance of an ecosystem and land degradation by promoting soil erosion, stream turbidity and modified fire behaviour.

- **Changes to the aquatic environment and water flows** — changes to hydrological flows and water quality can result in loss of native vegetation from surface waters, groundwater-dependent ecosystems and wetlands.

- **Inappropriate fire regimes** — changed fire regimes have had 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 and can be impacted if fires are inappropriately frequent or infrequent, unseasonal or of undesirable intensity or extent. Fire management to protect human assets can conflict with desired outcomes for native vegetation.

- **Urban development** — urbanisation can result in the direct loss of native vegetation, degradation of the condition of native vegetation and increase the impacts of many other threats to native vegetation, such as increased water extraction, pollution and waste.

- **Lack of valuation of the environment** — limited understanding or appreciation of our dependence on the environment, whether in economic or social terms, drives many of the negative impacts on native vegetation, such as clearing.

- **Climate change** — local and regional climates are changing throughout Australia, including changes to rainfall and temperature, and to the frequency and intensity of storms, droughts and fires. These changes may occur too quickly to allow for species to evolve, adapt or migrate. They will also exacerbate the impacts on native vegetation from other threats.

An example of a strategic plan to manage threats to native vegetation can be seen in Case Study 6.

Aerial view of crops near Renmark, SA (Photo by Andrew Tatnell)

Bushfire near the Andoom Mine, Weipa, QLD (Photo by Dragi Markovic)

Case Study 6: Restoring ecosystems through implementation of the NSW Bitou Bush Threat Abatement Plan

Controlling bitou bush to restore coastal ecosystems

Bitou bush is an invasive South African shrub that has spread along 80 per cent of the NSW coastline, posing an ongoing threat to coastal ecosystems and biodiversity. It was declared a Weed of National Significance and the invasion of native plant communities by bitou bush is listed as a key threatening process under the *NSW Threatened Species Conservation Act 1995*. To address this significant threat, the NSW Office of Environment and Heritage (OEH) is implementing the Bitou Bush Threat Abatement Plan (TAP).

The TAP identifies and prioritises the species, populations and ecological communities at risk from bitou bush. Sites where biodiversity was at risk were also identified and prioritised for control. This ensures that control of bitou bush is undertaken where the benefits to biodiversity are greatest. To this end, the TAP identifies 169 high-priority sites in NSW where management of bitou bush is critical for the survival of the species, populations and ecological communities most at risk. To assist site managers in determining the effectiveness of control, the *Monitoring Manual: for bitou bush control and native plant recovery* was developed and sets out a series of standard methods to measure the response of target weeds and native biota to weed management.

The implementation of the TAP is a combined effort involving many stakeholders, including the OEH, Catchment Management Authorities, other government agencies, local councils, Aboriginal groups, community volunteer groups and bush regenerators. Partners take action across all land tenures, allowing management to occur in a coordinated and strategic manner for biodiversity conservation. Implementation of the Bitou Bush TAP began in 2006 and currently occurs at 115 sites. A cost-benefit analysis has shown there is a $2.56 return for every dollar invested.

Cape Byron Headland, Cape Byron State Conservation Area

The Cape Byron State Conservation Area is managed by Cape Byron Trust, a collaborative partnership of the local Arakwal Aboriginal people, National Parks and Wildlife Service and the local community. In the 1960s, prior to the land being reserved for conservation, the Cape Byron headland was planted with bitou bush for land stabilisation following mining. Bitou bush became widespread throughout the 10 hectare site and began to affect a range of threatened plant species and ecological communities, including the Littoral Rainforest Endangered Ecological Community.

The Cape Byron headland site is ranked second highest priority in the Bitou Bush TAP. Bitou bush control at the site included aerial spraying in 2008 and 2009 and spot spraying, using a portable sprayer to maintain the treated area. Results of annual monitoring at Cape Byron show that bitou bush cover has decreased from 80 per cent in 2008 to being virtually absent in 2011. The average number of native species (species richness) within areas surveyed in the monitoring increased from an average of four to more than 11 per square metre, including a new record of a rare native grass: *Lepturus repens*.

These results show that positive biodiversity outcomes are achievable using the TAP approach, which includes sound planning and prioritisation of biodiversity and sites for weed control.

For more information, please see: *www.environment.nsw.gov.au/bitoutap*

Bitou bush infestation at Headland Point, August 2008 (Photo by S. Booth, NSW Office of Environment and Heritage)

Headland Point after treatment, October 2008 (Photo by S. Booth, NSW Office of Environment and Heritage)

Healthy regeneration at Headland Point, March 2011 (Photo by S. Booth, NSW Office of Environment and Heritage)

1.3 What can we do?

It is not feasible to return the condition and extent of Australia's native vegetation to the pre-European state. However, current generations have both the capacity and the responsibility to maintain and restore the health and resilience of native vegetation where it has been degraded. In other parts of Australia, where degradation has been avoided so far, we have obligations to ensure that it does not occur by limiting and/or mitigating the threats to our native vegetation. We need to increase our collective efforts towards vegetation management to build healthy native vegetation and resilient ecosystems, capable of providing continued support to our biodiversity, our natural heritage and our primary industries. This section explores the range of possible actions available to reduce threats to native vegetation, to improve management and, where necessary, to restore native vegetation.

It is recognised that some parts of Australia are still being developed. In such areas, strategic regional and land use planning is essential to provide well-considered development opportunities. Case Study 7 describes a formal adaptive management approach that is being applied to native vegetation clearing. A framework of cyclic analysis, deliberation and action is supporting a collective 'learning-by-doing' approach that will better inform resource users, the public and the government in their resource management activities.

Spraying weeds on the sand dunes at City Beach, Perth, WA (Photo by Dragi Markovic)

Strategic regional and land use planning can also provide opportunities to retain and favourably configure native vegetation, which is necessary to protect the function of ecosystems and to avoid environmental degradation as sustainable development proceeds. An example of a flexible approach to development and conservation can be seen in Case Study 8.

Working towards the goals and targets in this framework will assist in overcoming constraints in achieving native vegetation management outcomes. For example, strategic planning will enable improvements in the availability of resources for restoration such as seed and plants of local species. Improvements in the knowledge and understanding of native vegetation will lead to advances in native vegetation management techniques and in community capacity. Development of consistent native vegetation definitions, standards, monitoring and measuring systems will enable us to monitor and report on national progress towards improved native vegetation management.

Improving the condition, extent and connectivity of native vegetation will increase the likelihood that native plant communities can adapt to and be resilient to climate change. An example of this can be seen in Case Study 9.

A range of threats to native vegetation can be dealt with through planning and management actions, such as fire. Many native vegetation communities rely on particular fire frequency, intensity and seasonality for their long-term health, recruitment and survival. Larger human populations living in fire-prone areas have increased pressure to establish artificial fire and fuel reduction regimes that provide increased protection from wildfire for communities living in fire-prone areas. Changed fire regimes, post-European arrival in Australia, have had varying effects on native vegetation cover, with fire affecting the species composition, vegetation coverage and fuel load present in natural areas. Managing these areas presents region-wide challenges to protecting both ecosystem health and human safety and property. An example of an integrated approach to fire management is shown in Case Study 10.

Fenced area of Kangaroo Grass near Blyth, SA (Photo by Dragi Markovic)

Case Study 7: Adaptive Management Framework for Native Vegetation Clearing in the Daly River Catchment

The Adaptive Management Framework is a component of the NT Land Clearing Guidelines for the Daly River Catchment to enable vegetation clearing to be considered, approved by government, implemented effectively and monitored to enable a response to correct any unforeseen adverse consequences. The framework is based on an adaptive management cycle for assessment and approval of use and management of native vegetation clearing to improve management and understanding of system responses. This cycle of analysis, deliberation and action will help resource users, the public and government learn from their collective experiences and to apply learning to improve performance in resource management.

For more information, go to
http://lrm.nt.gov.au/__data/assets/pdf_file/0018/5418/adaptivemanagement.pdf

Daly River, NT (Photo courtesy of the Department of Natural Resources, Environment, The Arts and Sport)

Case Study 8: Property Vegetation Plans and the Native Vegetation Assessment Tool

A Property Vegetation Plan (PVP) is a voluntary but legally binding agreement negotiated between a landholder and the NSW Minister for the Environment. Under a PVP, Catchment Management Authorities can explore a range of native vegetation management options with landholders. PVPs can be used to conserve and enhance native vegetation; allow for circumstances where environmental outcomes are improved or maintained (most PVPs require offset provisions); provide landholder certainty by certifying the age of native vegetation and/or allow the continuation of certain land management practices. Between December 2005 and October 2012, 2 580 PVPs were negotiated for the clearing and management of native vegetation, resulting in 12 500 hectares of native vegetation approved for clearing, 767 400 hectares of native vegetation conserved or rehabilitated mostly on private land, and 3 470 000 hectares managed for invasive native scrub.

For more information on Property Vegetation Plans and the Native Vegetation Assessment Tool see: *www.environment.nsw.gov.au/vegetation/index.htm*; and, *www.environment.nsw.gov.au/vegetation/pvp.htm*

Cattle grazing on family property near Yeoval, NSW (Photo by Andrew Tatnell)

Case Study 9: Building resilience to climate change

The Building resilience to climate change into Tasmania's natural systems initiative is run by the Tasmanian Government's Department of Primary Industries, Parks, Water and Environment (DPIPWE).The initiative takes a whole-of-landscape approach that covers terrestrial, marine and freshwater environments and it is being implemented in collaboration with the Tasmanian Climate Change Office and other agencies. Its key outputs include:

- *Vulnerability of Tasmania's Natural Environment to Climate Change: An Overview* (Department of Primary Industries, Parks, Water and Environment 2010)
- risk assessment tools
- spatial layers for climate change vulnerability risk assessments and for adaptation planning to inform planning processes, management and policy principles
- identification and maps of glacial and contemporary refugia
- updated information and planning tools that incorporate climate change considerations.

These outputs will sit under the umbrella of the Tasmanian climate change adaptation strategy and help to develop management responses that aim to encourage the resilience of natural systems in the face of climate change. DPIPWE has established a range of projects to monitor the impacts of climate change on flora, fauna and native vegetation, particularly in coastal and alpine regions in the Tasmanian Wilderness World Heritage Area, and on cetaceans and sea-birds in the marine environment.

For more information, please see: *www.dpipwe.tas.gov.au/climatechange*

Coastal grassland — Prime Seal Island, TAS (Photo by Stephen Harris, Department of Primary Industries, Parks, Water and Environment)

Case Study 10: Northern Kimberley Fire Project

Fire in the Kimberley has significantly changed in the past 30 years. The new fire regime is having deleterious impacts on biodiversity, soils, pastoral production and cultural values, and is generating very high levels of greenhouse gas emissions. Building on the landmark West Arnhem Fire Management Agreement (WAFMA), which partners industry, government and traditional owners in a greenhouse gas abatement initiative, a fire management project is being developed for parts of the northern Kimberley region. Most of this area retains the full suite of native fauna and is considered of national significance as one of the few regions that is still ecologically intact.

Through an expanded fire program, including prescribed burning, the Northern Kimberley Fire Project aims to:

- reduce the extent, frequency and impacts of late dry season bushfires
- improve vegetation condition and habitat diversity
- reduce greenhouse gas emissions.

Further objectives of the project are to develop employment and economic opportunities for Kimberley Indigenous communities and to develop best practice processes for carbon and biodiversity offsets.

Like the WAFMA, the Northern Kimberley Fire Project will be part of a program across northern Australia that will involve governments, Indigenous organisations and others in developing and applying appropriate multi-stakeholder business models and partnerships to achieve sustainable environmental, economic and social outcomes.

Wet season prescribed burning (Photo by Ed Hatherley, Department of Environment and Conservation, WA)

To provide focus and purpose to achieving the vision for the management of Australia's native vegetation, this framework has identified goals and associated outcomes and targets. These are set out and explained in the next section. The relationships between the threats to native vegetation, actions available for managing these threats and the goals of the framework (which are detailed in Section 2), are indicated in Table 1, below.

Table 1 The relationship between threats to native vegetation, management actions, and the goals of the Framework (expanded in Section 2).

Threat	What can we do?	Relevant Goals
Loss, fragmentation and degradation of habitat	Protect and restore existing native vegetation. Allow natural regeneration or actively seed or plant areas of native vegetation to buffer, link and extend to improve vegetation function at a landscape scale.	Goal 1, Goal 2
Unsustainable use of natural resources	Use strategic regional and land-use planning to avoid unsustainable development. Change land management practices towards sustainability.	Goal 1, Goal 2, Goal 3, Goal 4, Goal 5
Invasive species	Plan for and conduct strategic weed and feral animal control activities.	Goal 2
Changes to the aquatic environment and water flows	Use strategic regional and land-use planning to avoid unsustainable development.	Goal 1, Goal 2
Inappropriate fire regimes	Use strategic regional and land-use planning to manage fire and fire risk, considering both native vegetation and human needs.	Goal 1, Goal 2, Goal 3, Goal 4, Goal 5
Urban development	Use strategic regional and land-use planning to avoid unsustainable development. Integrate native vegetation and its sustainable management into the urban and peri-urban environments.	Goal 1, Goal 2, Goal 4, Goal 5
Lack of valuation of the environment	Improve our understanding of our dependence on the environment in social and economic terms. Use ecosystem service markets to achieve biodiversity co-benefits. Improve land manager and community understanding of native vegetation management.	Goal 3, Goal 4, Goal 5
Climate change	Improve the extent, connectivity and condition of native vegetation by managing other threats. By doing so, we aim to create a more resilient landscape which is that likely to allow for species to evolve, adapt or migrate.	Goal 1, Goal 2, Goal 3, Goal 4, Goal 5




Photo credits from left to right: Dragi Markovic, Kelly Mullen, Waltraud Pix (2006) Friends of Mount Majura, Georgia Curry, Dulcie Wilton

2 Goals, outcomes and targets

Goals, outcomes and targets

This framework is structured around the following goals:

Goal 1 Increase the national extent and connectivity of native vegetation

Goal 2 Maintain and improve the condition and function of native vegetation

Goal 3 Maximise the native vegetation benefits of ecosystem service markets

Goal 4 Build capacity to understand, value and manage native vegetation

Goal 5 Advance the engagement and inclusion of Indigenous peoples in management of native vegetation.

These five goals are vital for achieving the framework's vision and are designed to build ecosystem resilience and to improve the productive capacity and ecosystem function of the landscape. People are a large part of achieving this. The framework also aims to utilise and build on existing knowledge, capacity and resources in native vegetation management at all levels of governance, the business and industry sectors, private landholders and in the general community.

Outcomes and targets have been developed for each of the goals (Table 2). These outcomes and the national targets will inform how jurisdictions plan their conservation activities. The targets are national and are designed to be measurable, achievable and realistic, while allowing for jurisdictional differences in their application. Many of the targets are process-based, providing the necessary first steps such as establishing baselines and the ability to measure progress towards the later outcome-based targets.

Fence under construction to protect newly planted trees, Cygnet Park Sanctuary, SA (Photo by John Baker)

Table 2 Goals, outcomes and targets

Goals	Outcomes	Targets
Goal 1 Increase the national extent and connectivity of native vegetation	A net national increase in native vegetation extent and connectivity. Adoption by jurisdictions of a decision-making hierarchy (Principle 12) to managing native vegetation where the first aim is to avoid loss; and, if that is not possible, to minimise loss; and if vegetation loss is unavoidable, impacts should be managed to maintain biodiversity values and ecosystem function. An increase in jurisdictions establishing and implementing mechanisms for strategic land use planning to encourage revegetation, build conservation connectivity and limit clearing of native vegetation — especially of threatened and rapidly declining native vegetation communities — while taking the sustainable production needs of other land uses into account.	**Target 1:** By 2014 all Australian state and territory governments will have developed targets for the extent of native vegetation in their jurisdictions. **Target 2:** By 2016 targets for native vegetation extent will have been recognised and reflected by all tiers of government and regional organisations in environment and natural resource management planning, land use planning and land management. **Target 3:** By 2020 there will be a net national increase in the extent of native vegetation, including where it can contribute to landscape connectivity.
Goal 2 Maintain and improve the condition and function of native vegetation	An agreed set of national protocols is developed for classifying the condition of native vegetation. An increase in effort to maintain and improve the condition and functionality of native vegetation through investment and management priorities, and through communicating information to and building capacity of land users and managers. An increase in the condition of threatened and rapidly declining native vegetation communities. An increase in the capacity of native vegetation to sustain critical ecosystem functions and provide multiple ecosystem services over the long term that will also enhance the productive capacity of land. An increase in the adoption of sustainable management practices for native vegetation in production landscapes.	**Target 4:** By 2014 agreed protocols are in place and by 2016 monitoring systems are in place to measure changes in the condition of representative native vegetation communities across Australia. **Target 5:** By 2015 strategic plans are developed for Australia's native vegetation including plans aimed at reducing priority threats to condition and their underlying drivers. **Target 6:** By 2025 there will be a net national improvement in condition of native vegetation.

Continued

Goals	Outcomes	Targets
Goal 3 Maximise the native vegetation benefits of ecosystem service markets	An agreed set of systems and guidelines is developed to promote biodiverse native vegetation outcomes from carbon sequestration measures and other ecosystem service markets. Native vegetation policies, plans and programs maximise ecosystem service market opportunities that contribute to native vegetation outcomes. Potential adverse impacts on native vegetation arising from ecosystem service markets are identified and minimised, including consideration of socio-economic impacts.	**Target 7:** By 2014 systems and guidelines have been developed for accreditation and reporting of the biodiversity co-benefits of carbon markets. **Target 8:** By 2015 credible and consistent accounting tools are developed to measure and report on carbon sequestration and avoidance initiatives across Australia, related to the establishment and management of native vegetation communities, including permanent, biodiverse, locally native plantings.
Goal 4 Build capacity to understand, value and manage native vegetation	An increase in the number of Australians, including business and industry sectors, who understand and appreciate the importance and practice of native vegetation management. An increase in incentive arrangements and business opportunities to encourage and support native vegetation conservation on private land. An improvement in methods of communication on native vegetation management and values, tailored to land users' and managers' needs. An increase in the adoption of management practices that achieve conservation and sustainable use of native vegetation by private land users and managers. A more partnership-based approach between sectors and organisations with responsibility for managing native vegetation, for example, between governments, landholders, industry and environmental groups.	**Target 9:** By 2014 targeted communication programs and community engagement programs are in place to enable a range of stakeholder groups to better understand the values of native vegetation. **Target 10:** By 2016 there has been an increase in the number of Australians who understand the benefits and values of native vegetation. **Target 11:** By 2016 major public and private land managers and industries recognise the benefits of native vegetation by undertaking practices that promote the ecologically sustainable management of native vegetation.

Goals	Outcomes	Targets
Goal 5 Advance the engagement and inclusion of Indigenous peoples in management of native vegetation	An increase in the recognition and use of Indigenous ecological knowledge to inform native vegetation management. Indigenous landholders have ongoing access to best practices, scientific knowledge and tools and resources that will build on traditional native vegetation management techniques. An increase in the direct involvement of Indigenous peoples in conservation and sustainable management of native vegetation.	**Target 12:** By 2014 Indigenous peoples have been engaged in developing culturally-appropriate approaches to their involvement in native vegetation management across Australia. **Target 13:** By 2016 culturally appropriate approaches have been implemented that involve Indigenous peoples in native vegetation management. **Target 14:** By 2016 relevant decision-makers in all levels of government understand the significance of native vegetation to Indigenous peoples and reflect this in decision making.

Agricultural vistas interspersed with vegetation corridors on Kangaroo Island, SA (Photo by John Baker)

2.1 Goal 1 – Increase the national extent and connectivity of native vegetation

2.1.1 Outcomes for Goal 1

- A net national increase in native vegetation extent and connectivity.
- Adoption by jurisdictions of a decision-making hierarchy (Principle 12) to managing native vegetation where the first aim is to avoid loss; and, if that is not possible, to minimise loss; and if vegetation loss is unavoidable, impacts should be managed to maintain biodiversity values and ecosystem function.
- An increase in jurisdictions establishing and implementing mechanisms for strategic land use planning to encourage revegetation, build conservation connectivity and limit clearing of native vegetation — especially of threatened and rapidly declining native vegetation communities — while taking socio-economic factors such as the sustainable production needs of other land uses into account.

2.1.2 Rationale for Goal 1

Extensive clearing of native vegetation in some parts of Australia has resulted in a significant loss of biodiversity, ecological structure and function. This has resulted in fragmentation of native vegetation, loss of ecosystem resilience and degradation of land and water including increased salinity, a decline in soil fertility, soil erosion and declining water quality. A goal to increase the extent and connectivity of native vegetation across Australia is aimed at addressing and reversing these impacts.

Because it is still difficult to put back native vegetation once lost, preventing further decline in extent of native vegetation should be the first priority for native vegetation management (consistent with Principles 8 and 12). In areas around Australia where native vegetation has already been lost and fragmented, active restoration and revegetation activities by land managers, the community, organisations and government are working to increase the extent and connectivity of native vegetation.

Case Study 11 details a national initiative for building ecological connectivity across the landscape through a range of protection, restoration and threat abatement activities for the purposes of establishing 'corridors' for native species.

Increasing the extent of native vegetation and its connectivity in fragmented landscapes means it will be better able to contribute effectively to the functioning of ecosystems, improve its capacity to

support land uses and environmental values, and will foster the resilience of ecosystems in the face of climate change. Increasing the extent and connectivity of native vegetation enhances ecosystem resilience because it:

- replaces basic ecosystem function and services in landscapes which have been over-cleared
- increases the available area of habitat to support the species and ecosystem processes dependant on native vegetation
- can reduce edge effects, which otherwise act as stressors on small, isolated patches of native vegetation
- facilitates the movement of certain species, individuals and genes across a wider range, allowing improved ability to adapt to climate change and other stressors
- can reduce the loss of genetic diversity within plant populations which results from small, isolated populations. Genetic diversity is important in maintaining ecosystem function and resilience (Sgro et al. 2011)
- improves prospects for re-colonising damaged areas, by allowing movement from undamaged areas.

There are also a number of economic, social and environmental reasons why we should strive towards this goal, as outlined in Section 1.1.2. Additionally, in the future it is anticipated that native vegetation will provide economic benefits through market driven mechanisms for carbon and other ecosystem attributes as well as the already established economic benefits of native vegetation already achieved in agriculture, forestry and tourism. These new ecosystem service markets should create substantial economic and enterprise opportunities for Indigenous Australians and for people in regional Australia, including primary producers, as those most vulnerable to the effects of landscape degradation. Increasing the extent and connectivity of native vegetation across the Australian landscape can therefore have wide-ranging benefits for both land managers and broader society.

Trade-offs are inevitable when considering whether or not a particular development should proceed. The achievement of a no-net-loss of native vegetation scenario requires a decision-making hierarchy (Principle 12). The hierarchy is first to consider if the loss can be avoided; if that is not possible, then consider if the loss can be reduced, for example rehabilitation of a site following the impact. Thirdly, consider if any significant residual impact can be offset by undertaking works to directly compensate for the loss. These offsets provide measurable conservation benefits to counterbalance the impacts that remain — 'residual impacts' — after appropriate avoidance, minimisation and on-site mitigation measures have been undertaken. Finally, consider if there are additional conservation actions that provide a general benefit for biodiversity; in some cases these have been described as 'indirect offsets' and may include actions such as research and education programs.

The approaches to environmental offsetting vary across the jurisdictions. In order to achieve the overall aim of 'no net loss' and preferably 'net gain' (Business and Biodiversity Offsets Programme 2009), environmental offsetting needs to be quantifiable.

Environmental offsetting can form part of a more strategic approach to mitigating impacts as well as increasing connectivity and building ecosystem resilience across the landscape. Market-based mechanisms for delivering offsets, such as the Biodiversity Banking schemes, are in place or in development in a number of jurisdictions. This includes programs such as Bushbroker in Victoria and the Biodiversity Banking and Offsets (Biobanking) Scheme in NSW.

Case Study 11: National Wildlife Corridors Plan

The *National Wildlife Corridors Plan* is the Australian Government's blueprint for retaining and restoring natural levels of ecological connectivity across the continent. Protected areas — including national parks, Indigenous Protected Areas and existing corridor initiatives — will provide the building blocks for restoring networks of ecological connectivity within landscapes. The aim is to produce healthy, productive landscapes that will, in turn, support the proper function of our environment and improve its resilience to the impacts of climate change.

Native vegetation is an important element of the Corridors Plan that includes protection, restoration and threat management actions. In more intact landscapes, the focus will be on protecting existing native vegetation. In more disturbed or fragmented landscapes, restoration and direct management may be more appropriate.

The Corridors Plan will work with a range of existing or new programs, such as Caring for our Country and the Land Sector Package element of the Clean Energy Future Plan. This includes Regional Natural Resource Management Planning for Climate Change and on-ground activities supported by the Biodiversity Fund (such as the creation of biodiverse plantings).

Voluntary action will be vital to the success of the *National Wildlife Corridors Plan* and the government will be actively cooperating with a range of stakeholders. These include private land managers, community groups, private investors, non-government organisations and regional natural resource management bodies.

For more information see the website: *www.environment.gov.au/biodiversity/wildlife-corridors*

*Sticky Everlasting flower (*Xerochrysum viscosum*) with native bee (Photo by Waltraud Pix, Friends of Mount Majura)*

2.1.3 Targets for Goal 1

Target 1: *By 2014 all Australian state and territory governments will have developed targets for the extent of native vegetation in their jurisdictions.*

Target 2: *By 2016 targets for native vegetation extent will have been recognised and reflected by all tiers of government and regional organisations in environment and natural resource management planning, land use planning and land management.*

Target 3: *By 2020 there will be a net national increase in the extent of native vegetation, including where it can contribute to landscape connectivity.*

To ensure that these targets are measurable and data is consistent across Australia, nationally agreed standards for measuring vegetation extent (Goal 1) and condition (Goal 2) will be set. Such standards will be determined and agreed to by states and territories during the implementation phase of this framework. The standards will need to consider thresholds for condition, to assist with determining contribution to extent. Reporting on the extent of woody vegetation is relatively straightforward at the state and national scale. Monitoring and reporting on the extent of non-woody vegetation and native vegetation condition (both woody and non-woody) is more challenging.

Target 1 has been set to ensure that all states and territories have not only examined their data and system requirements but have also used this information to develop specific targets for the extent of native vegetation within their jurisdiction.

When developing jurisdictional targets as required under Target 1, state and territory governments will be responsible for determining their own definitions of native vegetation. The data from these processes can then be amalgamated through existing national mapping processes, such as NVIS, in order to provide the data required for establishing baselines and measuring progress towards Target 3.

The jurisdictional targets for vegetation extent to be developed under Target 1 are to be determined by individual states and territories to match the information requirements, desired outcomes and monitoring capabilities of their jurisdiction. Such targets could be set at a state/territory, regional, or smaller scale such as for vegetation communities. Setting targets for the extent of vegetation communities would allow for customisation to local development and conservation priorities as well as incorporating information regarding the status of communities, for example threatened or common. Targets set at community level would also more easily allow for amalgamation of data to provide detail to the national picture. The specific targets will depend on the vegetation community/group in question, the goals set for its management and any relevant legislative requirements.

Target 2 has been set to ensure that jurisdictional targets for extent of native vegetation are put into practice through planning and land management. It is acknowledged that some jurisdictions already have ongoing processes with established schedules for reviewing their regional and local planning. This target does not change the requirements for reviewing existing plans such as regional natural resource management plans and biodiversity strategies.

Discussing successful tree planting on property east of Cowra, NSW (Photo by John Baker)

The intent of Target 2 is that jurisdictions can demonstrate that they have a process in place for incorporating consideration of native vegetation extent as well as appropriate threat management into planning. This includes, for example, the management of fire and weeds. In addition, planning should include appropriate consultation with land holders to avoid unintended impacts on potential or existing farm enterprise activities.

Target 3 sets a longer term goal for aggregate change in the extent of native vegetation across the country. The year 2020 is chosen on the basis that change should be measurable after two review cycles for this framework.

While the primary intent of Target 3 is to increase the extent of native vegetation, building connectivity is included in this target as it has been identified as a mechanism that can improve both biodiversity conservation outcomes and ecosystem function, which in turn has benefits for the overall health of the landscape and the land uses it supports. Connectivity could consist of areas connected by continuous habitat corridors, stepping-stone links or complementary land uses. While greater benefits can generally be achieved if increases in extent also result in improved connectivity, it should be noted that an increase in connectivity can aid the spread of invasive species and diseases and increase the risk of fire. Careful, landscape-scale management of these threats is, therefore, important.

Natural regeneration after changes in management (for example grazing control or exclusion) and revegetation by direct seeding or planting are the main means by which to increase the extent and connectivity of native vegetation. Appropriate seed sourcing — that maximises the genetic diversity, evolutionary potential and adaptedness of revegetation — will be important for revegetation efforts, and for building the resilience of native vegetation to climate change and other drivers (Broadhurst et al. 2008).

Case Study 12 describes a collaborative initiative to create an ecologically connected conservation area — a 'living link' — through strategic, landscape-scale, protection and restoration activities.

To see more examples of projects and initiatives where landholders, communities, industry, organisations and governments have been contributing to increase native vegetation extent and connectivity, see the Australia's Native Vegetation Framework website *www.environment.gov.au/nvf* which contains additional and extended case studies and links to more information and resources.

Case Study 12: Gondwana Link – towards 1000 km of ecologically functioning landscape

The Gondwana Link program, established in 2002, is a landscape scale vision to restore ecological connectivity across south-west Western Australia, and to build a 'living link' that extends eastward across part of the continent. The connectivity conservation area covers more than 20 million hectares over a 1000 km swathe of habitats — from the Karri forests of the south-west across the Great Western Woodlands to the edge of the Nullarbor Plain and beyond. Over 900 kms of this remains structurally intact and holds more than 75 per cent of the flowering plant taxa of the south west botanical hotspot. It is also arguably the part of the south west most buffered from accelerated climate change.

A range of conservation tools are being utilised and work ranges from fencing and protection of bushland with existing landholders, through to property purchase and restoration of cleared areas. Conservation Action Plans are in place for all key private land areas. Recently, techniques for large-scale carbon–funded ecological restoration have been developed and tested and monitoring programs are also in place for evaluating the effectiveness of this restoration work.

Cross cultural exchange is very much part of the Gondwana Link program, Nowanup leader Eugene Eades showing the way (Photo by Amanda Keesing)

One of the many Isopogons endemic to South Western Australia (Photo by Amanda Keesing)

In the agricultural sections of Gondwana Link, more than 8000 ha of strategically located bushland has been protected and some 2400 ha of paddock restored. In one key section of the Link, between Fitzgerald River and Stirling Range National Parks (the Fitz-Stirling) the cleared gaps between secure habitat areas have already been reduced by an average of 55 per cent.

Having established momentum, support and the technical ability to fund and undertake much of the work needed, an overall plan for achieving ecological success across the whole Link is being prepared.

The Gondwana Link program involves collaboration across a wide spectrum of private sector organisations, at local, national and international levels. Coordination is provided through Gondwana Link Ltd which is a company made up from the groups themselves, and serves as an example of how to achieve a conservation vision through a collaborative approach.

For more information, please see: *www.gondwanalink.org*

Salmon Gum Woodland south of Kalgoorlie in Gondwana Link (Photo by Amanda Keesing)

2.2 Goal 2 – Maintain and improve the condition and function of native vegetation

2.2.1 Outcomes for Goal 2

- An agreed set of national standards is developed for classifying the condition of native vegetation.
- An increase in maintaining and improving the condition and functionality of native vegetation through investment and management priorities, and through communicating information to and building capacity of land users and managers.
- An increase in the condition of threatened and rapidly declining native vegetation communities.
- An increase in the capacity of native vegetation to sustain critical ecosystem functions and provide multiple ecosystem services over the long term that will also enhance the productive capacity of land.
- An increase in the adoption of sustainable management practices for native vegetation in production landscapes.

2.2.2 Rationale for Goal 2

Maintaining or improving the condition of native vegetation maximises its resilience to stressors, contribution to ecosystem function and its ability to support productive land uses and values. Ecologically sustainable management and conservation of existing native vegetation avoids the mounting costs incurred by rehabilitating increasingly degraded areas, and is consistent with the framework Principles 8 and 10.

Effectively managing the processes that threaten the condition of native vegetation and ecosystem function is critical to ensure Australia's ecosystems remain healthy and resilient, biological diversity is conserved and the productive capacity of land is sustained into the future. This is particularly important to improve the resilience of native vegetation to threats, including climate change.

To maintain connectivity and to complement and buffer the national reserve system, it is important to restore native vegetation to good condition on land from all tenures, including private, leasehold and other community-held lands.

2.2.3 Targets for Goal 2

Target 4: *By 2014 agreed protocols are in place and by 2016 monitoring systems are in place to measure changes in the condition of representative native vegetation communities across Australia.*

Target 5: *By 2015 strategic plans are developed for Australia's native vegetation including plans aimed at reducing priority threats to condition and their underlying drivers.*

Target 6: *By 2025 there will be a net national improvement in condition of native vegetation.*

It is currently not possible to set a percentage target for native vegetation condition at the national or state scale. While considerable progress has been made on measuring condition at specific sites, there are still many issues to be solved in order to measure and report condition at a state and national scale. Target 4 is, therefore, the first step in achieving this goal as it will ensure agreed protocols and monitoring systems to measure changes in native vegetation condition are put in place. These protocols, while providing enough guidance to ensure data can be amalgamated nationally, need to be designed to consider the range of uses and management approaches to native vegetation. State and territory governments will work with the Australian Government to coordinate the development of agreed protocols and to determine the representative native vegetation communities in which condition will be measured and reported.

Removing daisy weeds from sand dunes at Patonga Beach, NSW (Photo by John Baker)

Examining new plantings of native species to replace willows in Kingston, TAS (Photo by Rob Blakers)

It is widely acknowledged that measures of vegetation condition are context dependent. That is, the measure will depend upon whether the objective for the assessment of condition is for production, biodiversity or aesthetic purposes. For example, good condition for grazing does not necessarily correspond with good condition for biodiversity. When assessing vegetation condition, it is essential therefore to indicate the purpose of the measurements being collected. In the current context, vegetation condition should relate to biodiversity and ecosystem function.

Classification systems for vegetation condition and function need to be simple to implement yet be able to accommodate the complexity inherent in assessments of biodiversity and ecosystem services. Once in place, such protocols and monitoring systems will allow for the measurement of progress towards Target 6: a net national improvement in condition of native vegetation.

In order to improve the condition of native vegetation, it is essential to manage threats to the condition of native vegetation and their underlying drivers. Given current difficulties in measuring vegetation condition at a national scale, managing degrading influences provides us with an opportunity to begin work to improve condition while we continue work on developing ways to measure such improvement.

Many threats to the condition of native vegetation can be addressed by the implementation of sustainable management practices. Strategic planning has been identified as the appropriate scale to influence management actions related to this goal. Strategic planning is an organization's process of defining its strategy, or direction, and making resource allocation decisions to pursue strategies including its capital and people. Strategic plans in this context mean plans relevant to the management of native vegetation which are developed by states and territories, NRM Regions, local governments, organisations, industry or land managers,

The Great Western Woodlands end of Gondwana Link (Photo by Amanda Keesing)

and are not the same as strategic assessments under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Target 5 has been set to ensure that jurisdictional strategic plans consider the management of native vegetation. These strategic plans need to address drivers and threats to vegetation as well as setting targets promoting vegetation condition.

For Target 5, there is deliberate flexibility in how jurisdictions interpret the term 'strategic plans'. Strategic plans could include threat-based plans, such as a weeds management plan, or area-based plans, such as regional natural resource management plans. Where such plans already exist that adequately meet the intent of this target, there is no requirement to duplicate or restructure them.

Target 6 sets a longer term goal for an improvement in vegetation condition based on the measurement and planning processes established through Targets 4 and 5. The year 2025 is chosen on the basis that change should be measurable after three review cycles for this framework. The longer timeframe compared with Target 3 reflects the greater difficulty in both measurement and achievements.

Land managers, communities, industry and governments can all participate in a range of activities that will improve native vegetation condition and work towards achieving Target 6. An example of this is Case Study 13.

Additional examples of people, organisations and governments improving native vegetation condition through their actions can be seen in the case studies, both included in this framework and available in extended format on the framework's website (*www.environment.gov.au/nvf*). The website also includes additional information and links to resources about on-ground actions which can improve native vegetation condition.

Large-scale threats such as climate change, and natural disasters such as major flooding or widespread fire could act against the progress of jurisdictions towards Target 6. For example, climate change may alter the composition of native plant communities as they adapt, evolve or migrate in response to changes in rainfall and temperature, and this may in turn affect the condition of native vegetation. The impact of major large scale threats will be recognised in relation to reporting on progress towards the targets of the framework.

Case Study 13: The Ecosystem Management Understanding (EMU) Project™ in inland Australia

Grappling with the problems of erosion and declining productivity, land managers in central Australian rangelands have engaged in a program called EMU (ecosystem management understanding). The program helps participants to better read the landscape and understand land degradation, then provides them with the tools to develop their own insights and techniques for rehabilitation.

EMU combines cutting edge landscape ecology (Pringle and Tinley 2003) with a process that empowers participating land managers. Participants often express enthusiasm for their new, deeper understanding of their property and priorities once they have developed their 'EMU eyes'. This approach has made EMU unique and extraordinarily effective in community based natural resource management. It is also easily transferable across tenures and cultures and will, therefore, also facilitate collaborative catchment initiatives.

Developed within the Regional Environmental Management Programme of the Gascoyne-Murchison Strategy in Western Australia, EMU is now based in Alice Springs at the Centralian Land Management Association, is active in the South Australian Arid Lands NRM region and is about to commence in far western Queensland. It is supported by the Northern Territory Department of Natural Resources, Environment, The Arts and Sport, Territory NRM and Central Land Council.

EMU offers land managers a practical approach for recovering productive landscape areas. Planning and on-ground works in the Northern Territory and South Australia are taking place on seventeen properties each averaging 350 000 hectares and with a number of others on the waiting list to participate in the program.

For more information, please see: *www.clma.com.au/documents/A4%20EMU%20info%20flyerpdf.pdf*

Acacia woodland commonly found in the arid zone of the Northern Territory (Photo courtesy of the Department of Natural Resources, Environment, the Arts and Sport)

2.3 Goal 3 – Maximise the native vegetation benefits of ecosystem service markets

2.3.1 Outcomes for Goal 3

- An agreed set of systems and guidelines are developed to promote biodiverse native vegetation outcomes from carbon sequestration measures and other ecosystem service markets.
- Native vegetation policies, plans and programs maximise ecosystem service market opportunities that contribute to native vegetation outcomes.
- Potential adverse impacts on native vegetation arising from ecosystem service markets are identified and minimised, including consideration of socio-economic impacts.

2.3.2 Rationale for Goal 3

The impact of climate change on Australia's native vegetation is expected to be profound (State of the Environment 2011 Committee). Some vegetation communities are expected to no longer exist, the extent and distribution of others will change, and novel ecosystems will arise. Many agricultural and production systems are also likely to be adversely affected. Widespread landscape scale pressures continue to be a threat across much of Australia's land environment and are likely to be exacerbated by climate change; the impacts of these pressures will be particularly pronounced on extensively managed environments.

Market-based instruments can place an economic value on ecosystem services, and therefore can provide economic incentives for environmental protection and actions, as well as providing an alternative revenue stream for land users and managers.

Markets also provide an opportunity for public education about best practice and the importance of a healthy environment.

Emerging ecosystem service markets can provide economically efficient opportunities to create multiple environmental benefits particularly for native vegetation. These opportunities should be maximised because:

- Diversity of vegetation is important to support diverse habitat types and ecosystems. Ecosystem service markets which do not include provisions for biodiversity could reduce vegetation diversity, for example where monoculture plantings replace native vegetation.
- Biodiverse plantings can deliver multiple environmental benefits, by increasing the extent and condition of native vegetation, maintaining biodiversity and providing carbon benefits over the long term. Biodiverse plantings may occur for environmental or aesthetic reasons, or as part of carbon or biodiversity offsets markets.
- Biodiverse plantings on previously cleared land can build the resilience of ecosystems, by increasing extent and connectivity of native vegetation and helping to restore ecosystem function.
- The carbon values of existing native vegetation can be recognised and promoted to help increase incentives for avoiding clearing of native vegetation.
- 'Carbon farming' opportunities, which have appropriate incentives for landscape restoration and management, represent a major opportunity for biodiversity and native vegetation benefits. Carbon sequestration initiatives will support reforestation, revegetation, rangeland restoration, soil carbon and native forest protection; emissions reductions opportunities will include savanna fire management.
- Well-functioning ecosystem service markets can have positive impacts for native vegetation and biodiversity. For example, water buyback to restore hydrological flows improves the health of major river systems as well as the surrounding native vegetation, or improved fire management regimes that could have both native vegetation and greenhouse gas avoidance benefits in northern Australia.

A market-based approach to achieving native vegetation and biodiversity benefits through a 'biodiversity banking' scheme is shown in Case Study 14.

Linda selecting seedlings to be re-potted, 2011 (Keshia Gordon)

Case Study 14: The Biodiversity Banking and Offsets Scheme (New South Wales Government)

The Biodiversity Banking and Offsets Scheme or 'BioBanking Scheme' is a market-based scheme for assessing and offsetting the impact of development on biodiversity. The scheme, administered by the NSW Office of Environment and Heritage, provides financial incentives to protect and enhance biodiversity by creating a market in 'biodiversity credits'. In this way the scheme helps to reduce the loss of biodiversity and threatened species in NSW.

BioBanking enables 'biodiversity credits' to be generated by landowners who commit to enhance and protect biodiversity values on their land through a permanent biobanking agreement. Credits can be purchased by developers in order to offset the impact of their development. The sale of credits generates funds for the management of the biobank site and provides an income to the landowner. The BioBanking Assessment Methodology is used to calculate number and type of biodiversity credits needed to counter the impacts of the development and the credits created by management actions at the biobank site.

More information on BioBanking can be found at: *www.environment.nsw.gov.au/biobanking*

Scribbly gum woodland at St Mary's Tower Biobanking site (Photo by Derek Steller, NSW Office of Environment and Heritage)

2.3.3 Targets for Goal 3

Target 7: *By 2014 systems and guidelines have been developed for accreditation and reporting of the biodiversity co-benefits of carbon markets.*

Target 8: *By 2015 credible and consistent accounting tools are developed to measure and report on carbon sequestration and avoidance initiatives across Australia, related to the establishment and management of native vegetation communities, including permanent, biodiverse, locally native plantings.*

Ecosystem service markets provide opportunities for improving native vegetation outcomes through incorporating such outcomes in their design. For example, co-benefits can be achieved by ensuring that high-quality revegetation occurs in biodiversity priority locations. It is currently only possible to set targets for the more established carbon market. Other ecosystem service markets, such as those related to salinity, water, or soil, can be revisited at a later stage once they are sufficiently established to set time-bound measurable targets for the inclusion of native vegetation benefits in their design. While this approach provides the time needed to analyse and explore the potential for emerging ecosystem service markets to improve native vegetation and biodiversity outcomes, the potential impacts of market distortions due to the absence of other ecosystem service markets must be identified and managed in the meantime.

In November 2011, the Clean Energy Future Legislative Package was passed by the Australian Parliament. Central to the package is the introduction of a carbon price that will cut pollution in the most environmentally effective and cost-efficient way, as well as create direct incentives for businesses to use energy more wisely. A key component of Australia's carbon market will be the voluntary carbon offsets scheme, known as the Carbon Farming Initiative (CFI). The CFI will provide new economic opportunities for farmers, Indigenous landholders and managers and other landholders and help the environment by reducing carbon pollution. The kinds of projects that could be credited include reforestation, revegetation and native forest protection.

The CFI includes a mechanism for recognising carbon offset projects that provide extra benefits, or co-benefits, to the environment or community. Co-benefits could include the restoration of habitat for native animals or the participation of Indigenous communities. This will assist carbon offset buyers with a preference for co-benefits to identify appropriate suppliers. It will also provide project proponents with the opportunity to access a premium price for carbon credits. The criteria and framework for recognising co-benefits will be included in the CFI regulations to ensure that claims are credible, transparent and have market salience.

The CFI recognises that certain activities that may be considered under the scheme may pose adverse impacts to the environment and local communities. There are three mechanisms within the CFI to manage such risks. Firstly, CFI projects must meet all Commonwealth, state and local government planning, environmental and water requirements. Secondly,

CFI projects must take account of the natural resource management plan relevant to the region. Thirdly, the CFI regulations include a 'Negative List' of activities that are ineligible because, in the circumstances, there is a risk the activity will have a material adverse impact on one or more of the following:

- the conservation of biodiversity
- the availability of water
- employment
- the local community
- land access for agricultural production.

The Negative List is designed to address residual risks not covered through existing regulations and planning regimes.

Another mechanism for reducing undesirable outcomes is the Biodiversity Fund — a measure under the Clean Energy Future: Land Sector Package. In recognition of the crucial role that biodiversity plays in landscape productivity and its significant carbon-storage capabilities, the Biodiversity Fund will support landholders to undertake projects that establish, restore, protect and manage biodiverse carbon stores. The Biodiversity Fund will improve the resilience of Australian landscapes to climate change, enhance the environmental outcomes of carbon farming projects and help landholders to protect carbon and biodiversity values on their land. Further details of the Biodiversity Fund are provided in Case Study 15.

Two-year-old native tree plantings growing in the Cygnet Park Sanctuary, SA (Photo by John Baker)

Landcare Coordinator with large area of tree plantings near Lismore, VIC (Photo by John Baker)

Targets 7 and 8 have been set to promote timely development of standards and tools that support the emergence of carbon markets that include consideration of biodiversity benefits. Reliable tools are required to account for the amount of carbon sequestered by various types of native vegetation and in order to better align biodiversity outcomes to carbon markets. These will need to encompass complex biodiverse locally-native plantings and existing native vegetation communities. The value of these tools will depend on sufficient information being available on the rate of carbon sequestration and storage for a range of native species.

Information systems form the foundation of well functioning ecosystem markets and native vegetation information is particularly important for carbon markets. It is important to ensure that ecosystem service markets are founded on accurate native vegetation measurement and monitoring information so we can properly value and account for biodiversity and other ecosystem services.

Under the CFI, government-approved methodologies provide a mechanism to measure the carbon abatement potential of eligible activities. CFI methodologies contain the detailed rules for implementing and monitoring specific abatement activities and generating carbon credits. Methodologies also provide incentives to develop the accounting tools for non-forest vegetation.

An independent expert committee, the Domestic Offsets Integrity Committee (DOIC), has been established to assess methodologies proposed under the CFI and provide recommendations on their approval to the Minister for Climate Change and Energy Efficiency. The purpose of the committee is to ensure that methodologies are rigorous and lead to real abatement.

Case Study 16 is an example of an information and support system designed to assist landholders in assessing the carbon potential of native reforestation activities on their land. It will also facilitate access to the carbon market.

Case Study 15: The Biodiversity Fund – part of the Clean Energy Future Plan

The Biodiversity Fund is part of the Australian Government's Land Sector Package under the Clean Energy Future. The Biodiversity Fund will provide $946 million over six years from 2011–12 to give farmers and landholders an opportunity to enhance biodiversity and connectivity in the landscape. The Biodiversity Fund complements the Carbon Farming Initiative (CFI), a key part of the Australian Government's climate change strategy that delivers opportunities for farmers and landholders to participate in the carbon market.

The Biodiversity Fund supports activities that establish, restore, protect and manage biodiverse carbon stores throughout Australia. A project funded under the Biodiversity Fund may also seek carbon credits through the CFI. This provides an additional incentive for land managers to establish biodiverse plantings, while delivering income for people in rural and regional Australia. The environmental benefits include increases in the quality and quantity of biodiverse native vegetation, improved landscape connectivity, improved landscape resilience to climate change and improved carbon storage.

The Biodiversity Fund takes a strategic, landscape-scale approach to investment. This approach is consistent with the Australian Government's focus on whole-of-ecosystem management to achieve ecological resilience, with regard to the scale and complexity of climate change impacts in the land sector. It also complements other national environmental initiatives, including *Australia's Biodiversity Conservation Strategy 2010–2030* and *Australia's Native Vegetation Framework*.

For more information on the Biodiversity Fund, see:
www.environment.gov.au/cleanenergyfuture/index.html

Northern Rosella at Edith Falls, NT (Photo by Brian Furby Collection)

Case Study 16: Protecting biodiversity and carbon storage in the Tasmanian Midlands

Through this project we have a great opportunity to build on our understanding of the potential to store biodiverse carbon in grasslands and woodland systems right in the middle of rapidly growing and productive agricultural enterprises.

Jonathan Duddles, CEO of Greening Australia Tasmania.

This large partnership project aims to restore 1000 hectares in the Tasmanian Midlands back to good ecological health, while at the same time developing new financial partnership models for farm based profit from biodiverse carbon markets. The project budget includes $2.2 million from the Australian Government's Biodiversity Fund.

The Midlands is one of the driest parts of Tasmania. It has been settled for over 150 years and as a result, has been fragmented by agricultural activities. The region is home to a number of threatened species and vegetation communities. Only three per cent of native grassland and 30 per cent of its original native vegetation remain. This makes the Tasmanian Midlands one of 15 national Biodiversity Hotspots, and a priority area for ecological restoration in Tasmania.

The project will work with landholders and the community to improve habitat opportunity for a number of rare and threatened plants and animals, and where appropriate, restore connections between remnant patches of grasslands and bushland. It is expected that over 25 years, at least 16 250 tonnes of carbon will be captured and stored by the project's restoration activities.

The project builds on a previous Greening Australia Tasmania partnership project with the University of Tasmania, which successfully restored 100 hectares of land, demonstrating the potential for good outcomes for carbon storage from the restoration of native vegetation.

Tasmanian Midlands (Photo by Peter Mathew)

The organisation has been working in Tasmania for more than 30 years and with farmers already willing to commit large tracts of land to restoration, Greening Australia Tasmania is optimistic about the potential outcomes for this project. A University of Tasmania team will embed research trials into this new project to improve the restoration techniques and biodiversity outcomes.

The project also has potential financial benefits for landholders, as carbon credits and biodiversity have the potential to create a future revenue stream for expansion of this project. A business model for native vegetation restoration that provides added value to farm income from carbon capture will be developed with input from the Tasmanian Farmers and Graziers Association. This model may involve a joint venture between the landholders and Greening Australia, where they share in the carbon income resulting from the restoration of biodiverse systems. The income can then either be reinvested in the landscape or used by farmers to offset other business costs.

While volunteers play an important role in restoration of native vegetation, commercial opportunities are also important to enable restoration works on a large scale. The project invests in the local community by providing opportunities for local employment. Up to 20 short-term positions will be created through this project during the site preparation, planting and establishment phases.

The project is led by Greening Australia Tasmania, in partnership with the Ian Potter Foundation, the Tasmanian Land Conservancy, Bush Heritage Australia, NRM North, Tasmanian Farmers and Graziers Association, the University of Tasmania and the Tasmanian Government's Department of Primary Industry, Parks, Water and Environment.

Tasmanian Midlands (Photo by Peter Mathew)

2.4 Goal 4 – Build capacity to understand, value and manage native vegetation

2.4.1 Outcomes for Goal 4

- An increase in the number of Australians, including business and industry sectors, who understand and appreciate the importance and practice of native vegetation management.
- An increase in incentive arrangements and business opportunities to encourage and support native vegetation conservation on private land.
- An improvement in methods of communication on native vegetation management and values, tailored to land users' and managers' needs.
- An increase in the adoption of management practices that achieve conservation and sustainable use of native vegetation by private land users and managers.
- A more partnership-based approach between sectors and organisations with responsibility for managing native vegetation, for example, between governments, landholders, industry and environmental groups.

2.4.2 Rationale for Goal 4

Engaging all Australians is fundamental if we are to succeed in achieving our vision. Effective planning and management of native vegetation depends heavily on the quality and overall capacity of associated human resources, networks and infrastructure (State of the Environment 2011 Committee). As such, Goal 4 and its accompanying targets are aimed at building the capacity to improve native vegetation management outcomes in the long term. Integrating environmental concerns into decision making will be important so it becomes everyone's business and is part of every relevant transaction, cost and decision. *Australia's Biodiversity Conservation Strategy* (NRMMC 2010a) refers to this as 'mainstreaming biodiversity'. Mainstreaming biodiversity requires a transformation of the way most Australians think about and value other living things.

Around 77 per cent of Australian land is privately owned or managed. This includes Indigenous lands, which make up 23 per cent of Australia's land area (State of the Environment 2011 Committee). Building the capacity of private land users and managers to understand, value and manage native vegetation is therefore crucial to the conservation of native vegetation and the health of our environment. Fifty-two per cent of Australia's land area is managed by approximately 136 000 agricultural businesses.

The remaining 23 per cent of Australian land is public land (Geoscience Australia, 2010), with nearly 13 per cent being held within the National Reserve System in 2008. Governments are therefore important land users and managers, and must ensure public land is managed effectively and sustainably, including acting as best practice examples for other land users and managers. In many parts of Australia, local Indigenous peoples are best placed to be able to manage native vegetation effectively. Indigenous peoples' involvement in native vegetation management is addressed through Goal 5.

Ecologically sustainable management of native vegetation relies on informed action — in legislation, planning, policy and on-ground management — by government, industry, the private sector and the community. There is a need for widespread investment in research and development programs, and knowledge and information systems to underpin good land and native vegetation management. These investments can be financial or in-kind commitments by government, private landowners and businesses, non-government organisations, Indigenous Australians and communities (State of the Environment 2011 Committee).

It is important to build capacity through communication with a range of stakeholders to assist understanding of native vegetation and its values, and provide access to good information and examples of best practice vegetation management. It is essential that private land users and managers are consulted and understand the native vegetation they are managing in a regional or landscape context in order to achieve effective vegetation connectivity that can deliver biodiversity benefits as well as other ecosystem services. Community contribution to ecologically sustainable native vegetation management is a key element of success and should be valued and maintained, while capacity building and engagement need to be integral and ongoing aspects of natural resource management programs.

Projects that have effectively engaged and supported the community constitute some of the most innovative and successful.

Case Study 17 is a community restoration project that is achieving positive ecological outcomes whilst promoting knowledge and capacity building.

Sustainable native vegetation and land management practices are increasingly becoming aligned with good financial and business management, which encourages land managers to invest in improving native vegetation. Across Australia, changes in a range of land management practices over the past decades are improving both the productive capacity and the health of land. An example of this is change in the wheat industry in response to drought, where new methods such as pasture cropping can be used to generate a wheat crop in native perennial pasture, whereas conventional systems of ploughing and burning stubble did not retain native pasture.

The *Australia state of the environment 2011* report found that improvements in land use during recent decades have been largely due to:

- increased land literacy in the community brought about by community-based programs such as Landcare
- increased levels of environmental education due to a greater focus on the environment in school curricula and professional learning and development programs
- better intrinsic understanding of the landscape, different land uses and how they interact (i.e. through land surveys)
- effective adoption of outcomes from research and development, such as conservation cropping strategies
- more formalised management practices that result in better planning and timing of operations, such as grazing systems and farm planning
- better access to information on sustainable systems of land management, such as through industry groups, Landcare networks and the Internet.

Native vegetation and biodiversity values can also be increased in conjunction with productive outcomes where high-input, introduced annual grazing systems are replaced with low-input native perennial grazing systems — for example, rotational grazing, which, because of the low inputs and greater resilience to drought, can be more successful than conventional grazing. These examples demonstrate current changes in land management practice and thinking where good management of native vegetation can increasingly be seen as a good business decision that has benefits for productivity as well as for the environment. Case Study 18 provides a specific example of how changed land management practices have resulted in productivity gains and improvements in landscape function and native vegetation outcomes.

Whilst progress has been made in how we approach native vegetation and land management, there has been an apparent weakening of the relevant human capital (knowledge, education and experience) required for effective land management (State of the Environment 2011 Committee). The *Australia state of the environment 2011* report identified several dimensions to this problem, each with interlinked causes and impacts, as follows:

- Loss of connection to the land — caused by increasing urbanisation.
- Higher education – the numbers of students taking higher degrees in agricultural science and forestry diminishing significantly over the past decade.
- Career paths for land managers — many traditional paths no longer exist.
- Scientific and technical capability — rebuilding scientific and technical capabilities in land-related disciplines requires career pathways that offer opportunities.

- Indigenous capacity – as Indigenous Australians assume responsibility for managing and co-managing more land, there is a corresponding need to build capacity in both traditional and scientific management. There is also a need to build the capacity of Indigenous and non-Indigenous Australians to work together in managing the land environment.

- Scientific and professional inputs into policy and planning – the weakening of human capital has a direct impact on the levels of scientific and professional advice provided to governments and on the ability to produce informed policy and planning outcomes.

Native vegetation management outcomes are affected by existing gaps in knowledge and in the difficulties in managing information to ensure it is disseminated and applied effectively on the ground. To address this, comprehensive national datasets need to be collected and collated, including the measurement of ecosystem services and improvement in management on-ground.

The accelerating pace of change affecting native vegetation demands continual review and updating of relevant knowledge and practice. Providing information to all land users and managers on vegetation condition, extent and services is integral to better management of native vegetation. Where productive use is a goal, improving the understanding of the role and value of the application of sustainable practices is important. Scientific knowledge needs to be interpreted for a wide audience and communicated clearly so it can inform action across the community, expand the range of native vegetation management tools and approaches available to work with, and drive greater communication between researchers, policy makers and native vegetation managers. Placing the correct information — based on robust science — at the fingertips of all those whose actions impact on the environment can help to ensure that policy development is evidence-based, that everyone understands how their actions impact on our environment and that all are empowered to make choices that preserve the health of our ecosystems.

2.4.3 Targets for Goal 4

Target 9: *By 2014 targeted communication programs and community engagement programs are in place to enable a range of stakeholder groups to better understand the values of native vegetation.*

Target 10: *By 2016 there has been an increase in the number of Australians who understand the benefits and values of native vegetation.*

Target 11: *By 2016 major public and private land managers and industries recognise the benefits of native vegetation by undertaking practices that promote the ecologically sustainable management of native vegetation.*

Building the capacity to understand and value native vegetation requires the involvement of a range of stakeholder groups. These groups include the broader community, land managers, regional staff, Indigenous peoples, industry groups, corporations and environmental non-government organisations. Different communication strategies will be required to reach

Walkers heading to The Pinnacle (Photo courtesy of Friends of the Pinnacle)

this diverse set of stakeholders. Groups such as the 'broader community' could also benefit from further division. It is possible that broad scale questions such as those asked in surveys conducted by the Australian Bureau of Statistics would be sufficient to measure progress in achieving these targets.

Effective communication programs include in their design an awareness of the issues that interest target audiences and how they best receive information.

Targets 1, 2, 4 and 5 from Goals 1 and 2 will help to build data and systems that provide information to support management and conservation of native vegetation. Target 9 aims to take this information further to a wide range of land users and interest groups, together with other information and experience in a form that meets their needs.

Target 10 provides a mechanism for assessing the effectiveness of the targeted communications across the different stakeholder groups identified in Target 9.

Target 11 focuses specifically on major land managers such as corporations, organisations and Australian Government, state and territory government agencies. These can have the greatest impact on increasing the effective management of native vegetation, as they are directly responsible for managing large areas of native vegetation across Australia.

Industries that have direct impacts on the environment (e.g. the agriculture, mining and construction sectors) and those that have indirect impacts (e.g. the financial services sector) need to incorporate consideration of those impacts on native vegetation into their decision-making processes, workplace practices, industry training requirements and corporate reporting.

The progress towards Targets 10 and 11 would likely be measured through surveys. For example, for Target 10 surveys could be undertaken following targeted communication activities to determine if people had a greater understanding of the value of native vegetation. For Target 11, major land managers could be surveyed to record the management practices undertaken and to determine whether their understanding of the importance of native vegetation had increased.

Case Study 17: The Regent Honeyeater Project

The Regent Honeyeater Project, aimed at conserving remnant communities of the communities of the endangered Regent Honeyeater as well as other threatened or near threatened animals and plants, has become one of the most active volunteer conservation projects in the nation. Based in Benalla, the project has engaged a whole farming community in restoring remnant box-ironbark habitat for the endangered species still living in the district and has attracted ongoing support from a wide cross-section of the community to help farmers with the on-ground works.

More than 1000 students from more than 20 local schools and hundreds of volunteers from universities, walking clubs, church groups, bird observers, scouts, environment groups and the public undertake propagation and planting days each year. To date, 1300 hectares of habitat have been restored and 500 000 seedlings have been planted.

Volunteers hard at work on a planting site at Lurg. Big groups of people can plant thousands of seedlings in a weekend. Planting the gaps between existing trees allows threatened species to move around in search of food and mates. (Photo by Ray Thomas, Regent Honeyeater Project Inc.)

The large-scale tree planting work has enormous benefits for landcare as well as for wildlife. Almost 900 hectares of restored habitat will help to reduce salinity and erosion problems, and improve water quality, stock shelter and natural pest control. The project also has big plans for the coming year. Twenty six planting sites have been identified and the nursery is stocked with over 40 000 plants ready for planting.

The project was chosen as one of Australasia's highly commended restoration projects by the Global Restoration Network.

For more information on the Regent Honeyeater Project, please see: *www.regenthoneyeater.org.au*

Replanting the understorey shrubs that were lost due to grazing helps to restore natural balances to keep the old trees healthy for the long term. (Photo by Ray Thomas, Regent Honeyeater Project Inc.)

Case Study 18: Whole of Paddock Rehabilitation – farmer-initiated revegetation program

The Whole of Paddock Rehabilitation Program (WOPR) story began in 1994 in Binalong NSW. In the face of decreased tree cover, erosion and increased dryland salinity, farmer Leon Garry decided to plant 40 kilometre 'alleys' of direct seeded native trees and shrubs on his property. By 1996, salt levels had started to decline. By 2001 the problem had largely disappeared.

The CSIRO confirmed the results and Greening Australia got involved to extend this model to other farmers. Recent funding through Caring for our Country has seen WOPR extended to the Lachlan and Murrumbidgee catchments and the West Australian wheat belt. In total, more than 50 farmers will be engaged in the rehabilitation of more than 1000 hectares of degraded land across South East NSW.

Landholders grow trees and put native pastures back for a host of different reasons. Some value the shade and shelter that windbreaks provide. As one farmer said, "This is a cold and miserable paddock. I would really like to get some protection for the stock." Reducing salinity and aiding the recovery of native grasses in paddocks are also strong motivators, particularly as they help in controlling serrated tussock.

WOPR is a practical, cost-effective and user-friendly program to integrate conservation and production. Successful WOPR trials have shown that as little as five years of rest and replanting can bring paddocks back to improved grazing productivity, at very little cost to the landholder. Incentives for large-scale native plant revegetation, coupled with a fixed-term stewardship payment, help land managers to better address land degradation issues at the paddock level.

Contour direct seeding — Direct seeding native trees and shrubs on the contour across a heavily cleared paddock (Photo courtesy of Greening Australia)

Tree and pasture belts — in the WOPR model around 25 per cent of paddock is returned to native trees and shrubs in widely spaced alleys (Photo courtesy of Greening Australia)

Family involved in Environmental Stewardship Program protecting box gum grassy woodland, Yeoval, NSW (Photo by Andrew Tatnell)

2.5 Goal 5 – Advance the engagement and inclusion of Indigenous peoples in management of native vegetation

2.5.1 Outcomes for Goal 5

- An increase in the recognition and use of Indigenous ecological knowledge to inform native vegetation management.
- Indigenous landholders have ongoing access to best practices, scientific knowledge and tools and resources that will build on traditional native vegetation management techniques.
- An increase in the direct involvement of Indigenous peoples in conservation and sustainable management of native vegetation.

2.5.2 Rationale for Goal 5

Native vegetation has been utilised and actively managed by Indigenous peoples for tens of thousands of years and is a critical element of country. Indigenous ecological knowledge has an important role to play in managing native vegetation. Applying traditional and contemporary Indigenous knowledge and management techniques has environmental, social, cultural, spiritual and economic benefits. In turn, native vegetation is a crucial aspect of Indigenous culture.

Indigenous Australians are significant contributors to biodiversity conservation and native vegetation management. Indigenous Australians now manage an estimated 23 per cent of the continent, or 1.7 million square kilometres, including some of the most biodiverse and intact ecosystems in Australia (Altman et al. 2011). There are now more than 40 Indigenous Protected Areas – areas of Indigenous-owned land or sea where traditional owners have entered into an agreement with the Australian Government to promote biodiversity and cultural resource conservation. These areas cover more than 26 million hectares and are included as part of Australia's National Reserve System.

This framework respects and acknowledges the role and custodianship of native vegetation by Indigenous people. Reflecting this, Australia is a signatory to the Convention on Biological Diversity and has ratified relevant articles in the convention that aim to respect and maintain traditional (ecological) knowledge, innovations and practices and to encourage the customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use.

The traditional rights and aspirations of Indigenous peoples, as well as their cultural and spiritual attachments and knowledge, are important to the management of native vegetation. Where possible, and culturally appropriate, making such knowledge available to all land users and managers would allow for traditional sustainable practices to be shared and implemented. The sustainable harvest and use of native vegetation also provides specific and culturally important economic opportunities for Indigenous peoples, for example, in the use of native plant fibre by the Indigenous arts industry, or the commercial development of bush foods.

It is also important that Indigenous peoples have access to scientific knowledge and best practice for natural resource management to build on traditional knowledge and practices. Strategic plans should adopt a cross-cultural and participatory approach that considers the rights and interests of Indigenous peoples and integrates Indigenous and scientific knowledge systems. Appropriate and equitable planning and management approaches at a regional level will be important (Natural Heritage Trust 2004).

In the context of this framework, Indigenous peoples are considered as both land managers and custodians of knowledge about native vegetation. Indigenous peoples own, manage and have significant influence over large areas of Australia, either through landholdings or through native title rights and interests. This goal aims to increase the engagement of Indigenous peoples both as the custodians of knowledge and as land managers for achieving social, economic and cultural benefits. An example of this can be seen in Case Study 19.

Uunguu Rangers training in control burning, WA (Photo by Robert Warren)

Case Study 19: Indigenous Rangers Program – Wellesley Islands Rangers, Queensland

The fellas are as proud as punch to put on their uniforms and go out and look after their country. Even though it's hard work they have a real sense of achievement. The whole community is proud of what they are doing.

Bradley Wilson, former Wellesley Islands Ranger

The Carpentaria Land Council Aboriginal Corporation (CLCAC) manages 25 full-time rangers funded through the Australian Government's Working on Country program and the Queensland Government's Wild River Ranger program. Rangers are employed to look after land and sea country using a combination of traditional knowledge and western technologies. The Wellesley Islands Rangers, based on Mornington Island in the Gulf of Carpentaria, operate across an area of more than 16 000 square kilometres. This includes 32 islands in the Wellesley Islands group, with a coastline of more than 520 kilometres.

Ranger activities are diverse and include management of threatened species, fire management, biodiversity monitoring, survey and control of feral animals, management of cultural sites and sea country patrols. A typical work day may also be spent managing weed infestations, which occur across large areas of Wellesley Islands.

In addition to on-the-job training, the group works with various training providers to develop skills in conservation and land management. The ranger group has well established relationships with organisations and initiatives such as the North Australian Indigenous Land and Sea Management Alliance, the Australian Quarantine and Inspection Service, the Threatened Species Network, Tropical Rivers and Coastal Knowledge and a number of research institutions. The rangers work plan was developed through the draft Thuwathu/Bujimulla IPA Management Plan that is supported by the Commonwealth Government's Indigenous Protected Areas program.

White Cliffs, Mornington Island (Photo courtesy of the Carpentaria Land Council Aboriginal Corporation (CLCAC) Wellesley Islands Sea Ranger Program)

The Wellesley Islands Rangers have been achieving results with their on-ground fire and weed management activities. Since the beginning of the Working on Country funding agreement, the rangers' achievements include annual treatment of more than 2000 hectares of weeds on the Wellesley Islands, removing infestations from several islands.

The main environmental weed species targeted include rubber vine (*Cryptostegia grandiflora*; a Weed of National Significance), Calotrope (*Caloptropis procera*) and bellyache bush (*Jaytropha sp.*). The rangers use traditional fire management practices, chemical (spraying, cutting and pasting) and mechanical removal to manage weeds to improve the condition of native vegetation on their country.

The group aspires to develop a coordinated and holistic approach to managing land and sea country for Traditional Owners, present and future, and is exploring the option of declaring the area an Indigenous Protected Area.

Navigating across the Wellesley Islands (Photo courtesy of the Carpentaria Land Council Aboriginal Corporation (CLCAC) Wellesley Islands Sea Ranger Program)

2.5.3 Targets for Goal 5

Target 12: *By 2014 Indigenous peoples have been engaged in developing culturally appropriate approaches to their involvement in native vegetation management across Australia.*

Target 13: *By 2016 culturally appropriate approaches have been implemented that involve Indigenous peoples in native vegetation management.*

Target 14: *By 2016 relevant decision-makers in all levels of government understand the significance of native vegetation to Indigenous peoples and reflect this in decision making.*

The area of land owned or managed/co-managed by Indigenous Australians continues to grow, as does the recognition of Indigenous interests in and contributions to land management. It is important to continue building capacity in both traditional and scientific natural resource management approaches (State of the Environment 2011 Committee) in order to effectively integrate both Indigenous and non-Indigenous needs and perspectives in planning and management for native vegetation.

Indigenous peoples should be engaged early in planning, development and implementation at all levels of decision-making (Department of Families, Housing, Community Services and Indigenous Affairs 2011). This will enable Indigenous peoples to determine the nature of their involvement in native vegetation management, including the cultural appropriateness of management programs and the potential for native vegetation management to provide employment opportunities. Conversely, effectiveness can be measured by the development of an approach or approaches supported by Indigenous communities. Working directly with, and engaging with, Indigenous communities can assist in advancing vegetation management programs. The diversity amongst Indigenous communities needs to be recognised when determining which groups to engage.

Target 12 recognises that the needs, rights and interests of Indigenous Australians should be acknowledged and included early in the planning and decision-making processes for native vegetation management. This will help to accommodate complex social, economic and cultural environments. Native vegetation management bodies and other land management agencies need the skills and resources to effectively engage and involve Indigenous peoples in management approaches. Indigenous Australians need better access to and awareness of scientific knowledge and best practice natural resource management approaches to native vegetation management. This knowledge needs to be communicated as part of a two-way engagement process and in ways that are responsive to cultural and language boundaries.

Target 13 recognises that engagement alone will not achieve meaningful outcomes. The active involvement of Indigenous Australians in native vegetation management can have broad and significant social, cultural, economic and ecological benefits. These are evident in Case Studies 19 and 20. To achieve similar benefits, native vegetation management will need to adopt a partnership approach between Indigenous and non-Indigenous needs, interests and perspectives. Integrating cultural management considerations into natural resource management on a broader scale will provide better recognition of the fundamental and continuing cultural relationship that exists between Indigenous Australians and the landscape.

Target 14 will be the realisation of Targets 12 and 13; where Indigenous needs, rights and interests are integrated into all levels of decision-making related to native vegetation management.

Case Studies 20 and 21 provide examples of cross-cultural exchange that is resulting in native vegetation management outcomes and capacity building for both Indigenous and non-Indigenous land managers.

Case Study 20: The ACT Caring for the Cotter River Catchment project

A successful cross-cultural partnership between the ACT Government and the Ngunnawal people has already started to achieve significant environmental benefits in the Cotter River catchment west of Canberra. The 482 square kilometre catchment, with its significant Ramsar-listed sphagnum bogs, was severely damaged in the catastrophic 2003 Canberra fires. Its restoration and protection is the focus of significant management action.

In March 2011, four Aboriginal trainees — the Yurung Dhaura team (named Strong Earth by the local United Ngunnawal Elders Council) — were employed for two years to restore at least 6.4 kilometres of stream bank and 76 hectares of high conservation ecosystems. To achieve these targets and to build experience and knowledge, the team trains at the Canberra Institute of Technology one day a week towards Conservation and Land Management Certificates II and III, and works four days each week in the catchment. The Yurung Dhaura team is also working with the Ngunnawal people to document their traditional ecological knowledge, and to apply this knowledge, where permission is given, to biodiversity conservation in the catchment. To date two workshops have been held with Ngunnawal knowledge holders, including a three-day workshop held in the catchment in August 2011. Two more workshops are planned in late 2012 and early 2013. The combination of traditional knowledge and vocational training is a key feature of this project.

Yurung Dhaura with scar tree. (Photo courtesy of the ACT Government)

The Yurung Dhaura team successfully carries out a wide range of native vegetation management activities, including weed control, tree planting, controlling pest animals, controlling erosion, repairing and maintaining tracks, and fencing sensitive areas. The team also monitors water quality, pest animal numbers and native flora and fauna, and collects native seeds and propagates seedlings for environmental restoration. Since commencing the project, the team has already exceeded some restoration targets. It has laid pig baits over an area of more than 200 hectares, completed more than 50 hectares of weed control, including removal of dense thickets of pine wildings in a 10 hectare area of *Xanthorrhoea* (grass trees), and planted nearly 6 hectares of bare ground to native trees and shrubs

The Caring for the Cotter Catchment project is a partnership between the ACT Government and the ACT Natural Resource Management Council, with the United Ngunnawal Elders Council, Canberra Institute of Technology, the Board of the Ngunnawal Healing Farm, ActewAGL, Greening Australia, the Southern ACT Catchment Group Waterwatch program and the local Indigenous community. It is funded by the Australian Government's Caring for our Country initiative.

*Yurung Dhaura team supervisor Joe Stephens and team member Krystal Hurst collect seeds from a Grass Tree (*Xanthorrhoea sp.*) species in the Cotter River Catchment west of Canberra. (Photo courtesy of the ACT Government)*

Case Study 21: Warddeken Walking on Country Project

The Warddeken Indigenous Protected Area (IPA), located in the Arnhem Land escarpment adjacent to Kakadu National Park, is managed by Warddeken Land Management Limited and funded partly through the Australian Government's IPA and Working on Country programs. A strong focus of the IPA is to manage the country using expertise from both Indigenous and non-Indigenous knowledge systems and to pass on traditional ecological and cultural knowledge to the younger generations.

Every year the Warddeken IPA holds a Stone Country Walk across the Arnhem Land Plateau to transfer Indigenous ecological knowledge and increase understanding of key land management issues such as feral animals, weeds, management of cultural sites and uncontrolled wildfires. In 2010, 140 people participated in the walk, which ran over 10 days. Young children of all ages were amongst the walkers and elders were flown by helicopter into overnight camping locations as the walk progressed.

The biggest achievement of the walk was seen as increasing the engagement of younger people in land management. Warddeken chairman Terrah Guymala wants "our children to work with Bininj (white people) and western knowledge, to build them up strong and proud of their culture".

Warddeken Indigenous Protected Area, NT (Photo by Peter Eve)



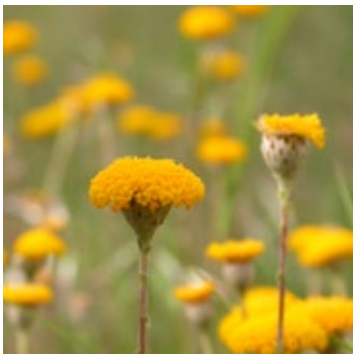



Photo credits from left to right: M. Fagg (Australian National Botanic Gardens), Andrew Tatnell, Waltraud Pix (2005) Friends of Mount Majura, Gayle Partridge, John Baker

3 Implementation

Implementation

In native vegetation management in Australia, the primary legislative responsibility rests with individual states and territories. The Australian Government has some specific legislative responsibilities for matters of national environmental significance protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and also maintains policies and programs to support native vegetation management.

All Australian governments have collaborated to develop this framework, in consultation with the community. Extensive public input across a diverse array of sectors, interest groups and individuals has been used to refine this framework and to help it reflect community perspectives. For this framework to succeed, the Australian community, including governments, businesses and individuals, must share responsibility and work together to implement it. The vision of the framework will be achieved through both formal and informal management processes. Many innovations and achievements in native vegetation management occur at the community level. The framework recognises and acknowledges community action and offers guidance and strategic direction for native vegetation management actions; from the local to the national level. The roles of government, and of the community and private sector, are discussed in the Purpose section of this framework (page viii).

All Australian governments developing and signing this document have agreed to work towards the goals and targets. At the government level, implementation of the framework will be formally coordinated through the COAG Standing Council on Environment and Water, which represents all states and territories and the Australian Government.

An implementation plan will be developed cooperatively through the COAG Standing Council on Environment and Water in order to align the jurisdictions' approaches and priorities for the implementation and reporting of this framework with those of other national environmental strategies. This includes *Australia's Biodiversity Conservation Strategy 2010–2030* (NRMMC 2010a). The implementation plan will identify the indicators, measuring and reporting processes and actions for achieving the framework, as well as appropriate timelines.

The elements of *Australia's Native Vegetation Framework* and the ways in which they are implemented by government at the national, and state and territory levels, need to be monitored systematically, so that the framework and associated management practices can be adjusted in response to new information, changing priorities and when evidence suggests current approaches need to be improved.

Darling Paroo Overflow, Tilpa, NSW (Photo by Cameron Slatyer)

The following approaches will be used to monitor and guide implementation of this framework:

- The COAG Standing Council on Environment and Water will monitor implementation of the framework through a cycle of reporting and review. The role of the framework in changing the way the community, industry and governments understand and address native vegetation management issues will be considered as part of the review process.

- All jurisdictions will report to the COAG Standing Council on Environment and Water on qualitative progress towards the goals in the first phase. Subsequent review phases will report on quantitative progress towards the targets in line with the review cycle and timelines established by the implementation plan. The Australian Government will coordinate reporting in consultation with all jurisdictions and will make every effort to streamline reporting with other reporting processes — for example, those required under *Australia's Biodiversity Conservation Strategy 2010–2030* (NRMMC 2010a) — as part of the Council of Australian Government's Reform Agenda (Council of Australian Government Reform Council 2011).

- The COAG Standing Council on Environment and Water may, in considering progress in the implementation of the framework, request interim independent reviews to identify and address obstacles to implementation.

- Consolidated reports will be published periodically under the implementation plan, so the whole community can follow national progress. This ongoing reporting will be managed centrally by the Australian Government on behalf of the COAG Standing Council on Environment and Water.

- The framework will also be monitored for its effectiveness in changing the way the community understands and responds to native vegetation management issues.

Although it is important to focus on the short to medium-term aims of the framework as set out in the goals and targets, it is the longer-term impacts from managing Australia's native vegetation that will ultimately determine its effectiveness. Thus, implementation of the framework by the states and territories, with coordination and synthesis provided by the Australian Government, will include long-term monitoring and evaluation and the incorporation of relevant actions into existing well-established systems. The information gained will be used to track trends in the condition and extent of Australia's native vegetation and to inform future reviews of the framework and refinements to management practices.

In making use of this knowledge gained from monitoring, it is important to follow adaptive management principles to ensure the best possible management practices are implemented under changing circumstances and as new knowledge is gained.

While implementation of the framework's goals and targets will be monitored and reported on by government, the contributions and achievements of all Australians through the actions of the community, industry and individuals will be fundamental to its success. The framework's vision will be achieved when our combined efforts result in an Australian landscape where healthy, diverse and connected native vegetation communities provide enduring environmental, social and economic benefits for all Australians.

Appendix 1: Current frameworks, policies, initiatives and legislation

Table A1.1: National frameworks, policies and initiatives

Framework/policy/initiative	Year of implementation
Australia's Biodiversity Conservation Strategy 2010–2030 (Natural Resource Management Ministerial Council (NRMMC))	2010
Australia's Biodiversity and Climate Change: a strategic assessment of the vulnerability of Australia's biodiversity to climate change (NRMMC)	2009
Australian Government Biodiversity Policy — Consultation draft (Commonwealth of Australia)	2011
Australia's National Framework for Environmental Management Systems in Agriculture (NRMMC)	2002
Australia state of the environment report 2011 (Commonwealth of Australia)	2011
Australia's Strategy for the National Reserve System 2009–2030 (NRMMC)	2009
Australian National Guidelines for Ramsar Wetlands (Commonwealth of Australia) National framework and guidance for describing the ecological character of Australia's Ramsar Wetlands Mapping Specifications for Australian Ramsar Wetlands National guidance on notifying change in ecological character of Australia's Ramsar Wetlands (Article 3.2)	2008
Australia's Oceans Policy (Commonwealth of Australia)	1998
Australian Pest Animal Strategy (NRMMC)	2007
Australia's State of the Forests (five-yearly report) (Commonwealth of Australia)	2008
Australian Weeds Strategy (NRMMC)	2007
Basin Plan (Commonwealth of Australia (Murray–Darling Basin Authority))	2012

Continued

Framework/policy/initiative	Year of implementation
Biodiversity Conservation Research: Australia's priorities (Australian and New Zealand Environment Conservation Council (ANZECC), Commonwealth of Australia)	2001
Carbon Farming Initiative (Commonwealth of Australia)	2011
Caring for our Country (Commonwealth of Australia) Environmental Stewardship Program National Reserve System Sustainable Farm Practices	2008
Coastal Catchments Initiative (Commonwealth of Australia)	2001
Commonwealth Coastal Policy (Commonwealth of Australia)	1995
Clean Energy Future: Land Sector Package (Commonwealth of Australia) Biodiversity Fund Regional Natural Resource Management Planning for Climate Change Fund Indigenous Carbon Farming Fund Carbon Farming Skills Carbon Farming Futures Carbon Farming Initiative Non-Kyoto Carbon Fund	2011
Closing the Gap — the Indigenous Reform Agenda (Council of Australian Governments (COAG))	2008
Covenants for Conservation program (Commonwealth of Australia)	2004
Directions for the National Reserve System — a partnership approach (NRMMC, Commonwealth of Australia)	2005
Engaging Today, Building Tomorrow: A framework for engaging with Aboriginal and Torres Strait Islander Australians (Commonwealth of Australia)	2011
EPBC Act Environmental Offsets Policy — Consultation draft (Commonwealth of Australia)	2011
Farm Forestry National Action Statement (Commonwealth of Australia)	2005
Forest Conservation Fund (Commonwealth of Australia)	2007
Heads of Government Agreement on Roles and Responsibilities (COAG)	1997

Continued

Framework/policy/initiative	Year of implementation
Indigenous Australians Caring for Country (Commonwealth of Australia)	2008
Indigenous Heritage Program	2006
Indigenous Protected Areas	1998
Working on Country	2006
Intergovernmental Agreement on the Environment (Australian governments)	1992
Issues paper to inform development of a national food plan (Commonwealth of Australia)	2011
Living Murray Initiative (Murray–Darling Basin Ministerial Council; Commonwealth of Australia (Murray–Darling Basin Authority))	2004
Murray–Darling Basin Riparian Restoration Experiment (Murray–Darling Basin Ministerial Council; Commonwealth of Australia (Murray–Darling Basin Authority))	2000
Murray–Darling Basin Salinity Management Strategy 2001–2015 (Commonwealth of Australia (Murray–Darling Basin Authority))	2001
National Approach to Firewood Collection and Use in Australia (ANZECC)	2001
National Biodiversity and Climate Change Action Plan 2004–2007 (NRMMC)	2004
National Cooperative Approach to Integrated Coastal Zone Management — Framework and Implementation Plan (NRMMC)	2006
National Environmental Research Program (Commonwealth of Australia)	2010
National Forest Policy Statement (Commonwealth of Australia)	1992
National Framework for Environmental Management Systems in Australian Agriculture (NRMMC)	2002
National Framework for the Management and Monitoring of Australia's Native Vegetation (NRMMC)	2001
National Framework for Natural Resource Management Standards and Targets (NRMMC)	2002
The National Indigenous Forestry Strategy (Commonwealth of Australia)	2005
National Local Government Biodiversity Strategy (ANZECC)	1999
National Objectives and Targets for Biodiversity Conservation 2001–2005 (Commonwealth of Australia)	2001
National Plan for Environmental Information (Commonwealth of Australia)	2010

Continued

Framework/policy/initiative	Year of implementation
National Principles and Guidelines for Rangeland Management (ANZECC and ARMCANZ)	1999
National Strategy for Ecologically Sustainable Development (COAG)	1992
National Strategy for the Conservation of Australia's Biological Diversity (ANZECC)	1996
National Water Initiative (COAG)	2004
National Water Quality Management Strategy (Commonwealth of Australia)	1998
National Wildlife Corridors Plan (Commonwealth of Australia)	2012
Nationally Agreed Criteria for the Establishment of a Comprehensive, Adequate and Representative Reserve System for Forests in Australia (JANIS criteria) (ANZECC/Ministerial Council on Forestry, Fisheries and Aquaculture (MCFFA))	1997
Native Fish Strategy for the Murray–Darling Basin 2003–2013 (Commonwealth of Australia (Murray–Darling Basin Authority))	2003
Our Cities, Our Future: A national urban policy for a productive, sustainable and liveable future (Commonwealth of Australia)	2011
Principles for Sustainable Resource Management in the Rangelands (NRMMC)	2010
Reforming National Environment Law (EPBC Act) — An overview (Commonwealth of Australia)	2011
Strategic Plan of Action for the National Representative System of Marine Protected Areas (ANZECC)	1999
Sustainable Australia — Sustainable Communities: A Sustainable Population Strategy for Australia 2011 (Commonwealth of Australia)	2011
Threat Abatement Plans (various) (Commonwealth of Australia)	From 1996
Wetlands Policy of the Commonwealth Government of Australia (Commonwealth of Australia)	1997
Water for the Future (Commonwealth of Australia)	2008
Weeds of National Significance (NRMMC)	1998

National Information sources or databases	Year of implementation
Australia state of the environment report 2011 (Commonwealth of Australia)	1996
Australia's environment: Issues and Trends Jan 2010 (Australian Bureau of Statistics, Commonwealth of Australia)	2001
National Coordinating Committees for Natural Resource Data Themes (Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES); Australian Government):	
• National Committee for Land Use and Management Information (NCLUMI);	
– Australian Collaborative Land Use and Management Program (ACLUMP)	2009
– Multi-Criteria Analysis Shell for Spatial Decision Support (MCAS-S)	2011
• National Committee for Soil and Terrain (NCST)	
– Australian Collaborative Land Evaluation Program (ACLEP)	1992
– Australian Soil Resource Information System (ASRIS	2001
National Vegetation Information System (NVIS)	2001
Australian Collaborative Rangeland Information System (ACRIS)	2001
National Scale Vegetation Assets, States and Transitions (VAST Version 2) (ABARES, Commonwealth of Australia)	2005
Collaborative Australian Revegetation and Restoration Information System (CARRIS) (Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES); Australian Government)	2008

International agreements and initiatives	Year of implementation
Business and Biodiversity Offsets Program	2009
Convention on Biological Diversity	1993
Convention on Wetlands of International Importance (Ramsar Convention)	1971
• National Committee for Soil and Terrain (NCST)	
– Australian Collaborative Land Evaluation Program (ACLEP)	1992
– Australian Soil Resource Information System (ASRIS	2001
Global Strategy for Plant Conservation 2011–2020 (Convention on Biological Diversity)	2002
Kyoto Protocol (United Nations Framework Convention on Climate Change)	Adopted 1997; in force 2005

Continued

International agreements and initiatives	Year of implementation
Rio Declaration on Environment and Development (United Nations Environment Program)	1992
United Nations Convention to Combat Desertification	1992
United Nations Declaration on the Rights of Indigenous Peoples	2007
United Nations Framework Convention on Climate Change (United Nations Framework Convention on Climate Change)	1992
United Nations International Forestry Agreement	2007
World Heritage Convention (United Nations Educational, Scientific and Cultural Organization)	1974

Commonwealth legislation	Year
Aboriginal and Torres Strait Islander Heritage Protection Act 1984	1984
Australian Heritage Council Act 2003	2003
Australian National Registry of Emissions Units Act 2011	2011
Carbon Credits (Carbon Farming Initiative) Act 2011	2011
Carbon Credits (Carbon Farming Initiative) Regulations 2011	2011
Carbon Credits (Consequential Amendments) Act 2011	2011
Clean Energy Act 2011	2011
Clean Energy Regulator Act 2011	2011
Climate Change Authority Act 2011	2011
Environment Protection and Biodiversity Conservation Act	1999
National Greenhouse and Energy Reporting Act 2007	2007
Natural Heritage Trust of Australia Act 1997	1997
Native Title Act 1993	1993
National Water Commission Act 2004	2004
Quarantine Proclamation Act 1998	1998
Regional Forest Agreements Act 2002	2002
Water Act 2007	2007
Wet Tropics of Queensland World Heritage Area Conservation Act 1994	1994

Table A1.2: State and Territory Initiatives

Jurisdiction	Framework/Policy	Legislation
Australian Capital Territory	ACT Kangaroo Management Plan (2010) ACT Nature Conservation Strategy (1998) ACT Lowland Woodland Conservation Strategy (Action Plan No 27) ACT Lowland Native Grassland Conservation Strategy (Action Plan No 28) ACT Pest Animal Management Strategy 2011–2021 (2011 draft) ACT Planning Strategy (2011 draft) ACT Weeds Strategy 2009–2019 Aquatic Species and Riparian Zone Conservation Strategy (Action Plan No 29) Bush Capital Legacy: ACT NRM Plan (2009) National Capital Plan Strategic Bushfire Management Plan (2009) Weathering the Change, The ACT Climate Change Strategy 2007–2025	*Emergencies Act 2004* *Environment Protection Act 1997* *Gene Technology Act 2003* *Nature Conservation Act 1980* *Planning and Development Act 2007 (including the Territory Plan)* *Pest Plants and Animals Act 2005* *Water Resources Act 2007*
New South Wales	Aboriginal Affairs Plan (2003–2012)/Aboriginal Affairs Priority Statement Aboriginal People, the Environment and Conservation Principles 2008 (DECCW) Biocertification Assessment Methodology Brigalow-Nandewar Community Conservation Area Agreement Catchment Action Plans Conservation Partners Program including conservation Agreements, Wildlife Refuges DPI Policy and Guidelines for Aquatic Habitat Management and Fish Conservation Environmental Management Guidelines for growing cut flowers (2001) Framework for Wild River Assessment Great Eastern Ranges Initiative Native Vegetation Reform Implementation Group Final Report (2003) NSW 2021 State Plan	*Catchment Management Authorities Act 2003* *Coastal Protection Act 1979* *Crown Lands Act 1989* *Environmental Planning and Assessment Act 1979* *Fisheries Management Act 1994* *Forestry Act 1916* *Forestry and National Park Estate Act 1998* *Local Government Act 1993* *Marine Parks Act 1997* *Natural Resources Commission Act 2003* *National Parks and Wildlife Act 1974*

Continued

Jurisdiction	Framework/Policy	Legislation
New South Wales (continued)	NSW Biodiversity Strategy (1999–2003) NSW Biobanking Assessment Methodology NSW Biodiversity Banking and Offsets Scheme NSW Biodiversity Strategy 2010–2015 (Draft) NSW/Commonwealth Regional Forest Agreements (North East, Southern and Eden) NSW Climate Impact Profile NSW Environmental Outcomes Assessment Methodology NSW Estuary Management Program NSW Firewood Policy 2008 NSW Forest Agreements (Upper North East, Lower North East, Southern and Eden) NSW Government Sustainability Policy NSW Nature Conservation Trust's Covenanting and revolving fund NSW Native Vegetation Assessment Tool (PVP Developer) NSW Native Vegetation: Compliance and Enforcement Strategy 2009 NSW National Parks Establishment Plan 2008 NSW Registered Property Agreements Program NSW Salinity Strategy NSW Standard and Targets for Natural Resource Management NSW State of the Environment NSW State Groundwater Dependent Ecosystems Policy NSW State Rivers and Estuaries Policy NSW Statewide Standard and Targets for Natural Resource Management NSW Vegetation Information System NSW Water Conservation Strategy NSW Wetlands Management Policy Policy on the Translocation of Threatened Fauna in NSW	*Native Title (New South Wales) Act 1994* *Native Vegetation Act 2003* *Noxious Weeds Act 1993* *Plantations and Reafforestation Act 1999* *Plantations and Reafforestation (Code) Regulation 2001* *Protection of the Environment Operations Act 1997* *Rivers and Foreshores Improvement Act 1948* *Roads Act 1993* *Rural Fires Act 1997* *Rural Lands Protection Act 1998* *Soil Conservation Act 1938* *Threatened Species Conservation Act 1995* *Threatened Species Conservation (Biodiversity Banking) Regulation 2008* *Water Management Act 2000* *Western Lands Act 1901* *Wilderness Act 1987*

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Jurisdiction	Framework/Policy	Legislation
New South Wales (continued)	Priorities for Biodiversity Adaptation to Climate Change (2010) Private Native Forestry Code of Practice Protected and threatened plants in the cut-flower industry: Sustainable management plan 2008–2012 State Environmental Planning Policy No. 14 — Coastal Wetlands State of the Catchments reports State Plan — A New Direction for NSW (2006) State Water Management Outcomes Plan Strategic Regional Land use Policy (2011) Stressed Rivers Assessment Process Threatened Species disclosure policy Water Sharing Plans Wentworth Group of Concerned Scientists — A New Model for Landscape Conservation in NSW (2003)	
Queensland	Building Nature's Resilience — A Biodiversity Strategy for Queensland Blueprint for the Bush Strategy ClimateQ: toward a greener Queensland Delbessie Agreement (also known as the State Rural Leasehold Land Strategy) Draft Master Plan, Naturally Queensland 2020 (2011) Management Program for Protected Plants in Queensland 2011–2015 Managing Grazing Lands in Queensland (2011) Nature Refuges Program Offsets for Net Gain of Koala Habitat in South East Queensland Policy OnePlan initiative Policy for Vegetation Management Offsets Protected Areas for the Future — Cornerstones for Terrestrial Biodiversity Conservation (2010)	*Cape York Peninsula Heritage Act 2007* *Coastal Protection and Management Act 1995* *Environmental Protection Act 1994* *Environmental Protection (Water) Policy 2009* *Fisheries Act 1994* *Forestry Act 1959* *Land Act 1994* *Land Protection (Pest and Stock Route Management) Act 2002* *Land Title Act 1994* *Marine Parks Act 2004* *Nature Conservation Act 1992*

Continued

Jurisdiction	Framework/Policy	Legislation
Queensland (continued)	Queensland Biodiversity Offset Policy Queensland Biosecurity Strategy 2009–14 Queensland Coastal Plan Queensland Environmental Offsets Policy Queensland Greenspace Strategy 2011–2020 Queensland Weeds Strategy 2002–2006 Queensland Wetlands Programme Q2 Coasts and Country Program Reef Water Quality Protection Plan 2009 State Planning Policy 1/12: Protection of Queensland's strategic cropping land	*Recreation Areas Management Act 2006* *Strategic Cropping Land Act 2011* *Sustainable Planning Act 2009* *Vegetation Management Act 1999* *Water Act 2000* *Wet Tropics World Heritage Protection and Management Act 1993* *Wild Rivers Act 2005*
Northern Territory	Adaptive Management Framework for Native Vegetation Clearing in the Daly River Catchment Draft Environmental Offsets Policy Living Rivers Discussion Paper Northern Territory Agribusiness Strategy 2011–2015 Northern Territory Climate Change Policy Northern Territory Integrated NRM Plan 2010–2015 Territory Eco-Link: 21st Century Conservation Territory 2030	*Bushfires Act 2009* *Environmental Assessment Act 1994* *Fisheries Act 1988* *Heritage Conservation Act 1991* *Northern Territory Aboriginal Sacred Sites Act 1989* *Parks and Reserves (Framework for the Future) Act 2003* *Pastoral Lands Act 1992* *Pastoral Lands Regulations 2011* *Planning Act 2009 (Northern Territory Planning Scheme)* *Plant Health Act 2008* *Soil Conservation and Land Utilisation Act 2009* *Territory Parks and Wildlife Conservation Amendment Act 2006*

Continued

Jurisdiction	Framework/Policy	Legislation
Northern Territory (continued)		*Water Act 1992* *Waste Management and Pollution Control Act 2011* *Weeds Management Act 2001*
South Australia	A Biosecurity Strategy for South Australia 2005 Living Coast Strategy for South Australia 2004 No Species Loss: A Nature Conservation Strategy for South Australia 2007–2017 Prospering in a Changing Climate: A Draft Climate Change Adaptation Framework for South Australia 2010 Regional Natural Resource Management (NRM) Plans (x8 NRM regions in SA) South Australia's Strategic Plan 2011 State Natural Resources Management Plan 2006 Tackling Climate Change: South Australia's Greenhouse Strategy 2007–2020 The South Australian Planning Strategy (*for land-use and development*) Wetland Strategy for South Australia 2003	*Aboriginal Heritage Act 1988* *Anangu Pitjantjatjara Yankunytjatjara Land Rights Act 1981* *Coast Protection Act 1972* *Climate Change and Greenhouse Emissions Reduction Act 2007* *Crown Land Management Act 2009* *Development Act 1993* *Environment Protection Act 1993* *Forestry Act 1950* *Forest Property Act 2000* *Maralinga Tjarutja Land Rights Act 1984* *Marine Parks Act 2007* *National Parks and Wildlife Act 1972* *Native Vegetation Act 1991 Native Vegetation Regulations 2003* *Natural Resources Management Act 2004* *Pastoral Land Management and Conservation Act 1989* *River Murray Act 2003* *Wilderness Protection Act 1992*

Continued

Jurisdiction	Framework/Policy	Legislation
Tasmania	Fuel Reduction Burning Plan 2008 Guidelines for Vegetation Burning Marine Protected Areas Strategy Natural Resource Management Framework Permanent Native Forest Estate Policy (2011) State Policy on the Protection of Agricultural Land 2009 State Coastal Policy 1996 State Fire Management Policy 2009 Tasmania's Nature Conservation Strategy (2002–2006) Tasmanian Private Forest Reserve Conservation Covenanting Program Tasmanian Protected Areas on Private Land Conservation Covenanting Program Tasmanian/Commonwealth Regional Forest Agreement 1997 (and supplementary Tasmanian RFA (Tasmanian Community Forest Agreement 2005) Tasmania Together 2020 Tasmanian Wetlands Strategy Threatened Species Strategy for Tasmania 2000 Water for Ecosystems Policy	*Crown Lands Act 1976* *Forestry Act 1920* *Inland Fisheries Act 1995* *Land Use Planning and Approvals Act 1993* *Nature Conservation Act 2002* *National Parks and Reserves Management Act 2002* *Natural Resource Management Act 1993* *Plant Quarantine Act 1997* *State Policies and Projects Act 1993* *The Forest Practices Act 1985* *Threatened Species Protection Act 1995* *Water Management Act 1999*
Victoria	Trust for Nature (Victoria) Conservation Covenanting Program Victoria's Biodiversity Strategy (1997) Victoria's Native Vegetation Management — A Framework for Action (2002) Draft Victorian Waterway Management Strategy Victorian/Commonwealth Regional Forest Agreements (Central Highlands, East Gippsland, Victoria Gippsland, North East, West)	*Catchment and Land Protection Act 1994* *Conservation, Forests and Lands Act 1987* *Crown Land (Reserves) Act 1978* *Environment Effects Act 1978* *Environmental Protection Act 1970* *Forests Act 1958* *Flora and Fauna Guarantee Act 1988* *Heritage Rivers Act 1992* *National Parks Act 1975* *Planning and Environment Act 1987* *Water Act 1989* *Wildlife Act 1975*

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Jurisdiction	Framework/Policy	Legislation
Western Australia	DEC Framework for Mapping, Classification and Evaluation of Wetlands in WA (2007) DEC Nature Conservation Covenant Program EPA Bulletin No. 1 — Environmental Offsets (2008) EPA Position Statement No. 2 — Environmental Protection of Native Vegetation in WA (2000) EPA Position Statement No. 4 — Environmental Protection of Wetlands (2004) EPA Position Statement No. 8 — Environmental Protection in Natural Resource Management (2003) EPA Position Statement No. 9 — Environmental Offsets (2006) EPA Guidance Statement No. 19 — Environmental Offsets (2008) EPA Guidance Statement No. 33 — Environmental Guidance for Planning and Development (2008) Management of Commercial Harvesting of Protected Flora in Western Australia (2008) National Trust of Australia (WA) Conservation Covenanting Program State Planning Policy No. 2 — Environment and Natural Resources (2003) State Planning Policy No. 2.8 — Bushland Policy for the Perth Metropolitan Region (2011) Waters & Rivers Commission Waterways WA Statewide Strategy (draft) (2001) Water & Rivers Commission Statewide Policy No. 5 — Environmental water provisions policy for Western Australia (2000) Western Australian/Commonwealth Regional Forest Agreement (South–West) Wetlands Conservation Policy for Western Australia and Implementation Strategy (1997)	*Bush Fires Act 1954* *Conservation and Land Management Act 1984* *Country Areas Water Supply Act 1947* *Environmental Protection Act 1986* *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* *Fire and Emergency Services Authority of Western Australia Act 1998* *Fish Resources Management Act 1994* *Land Administration Act 1997* *Planning and Development Act 2005* *Soil and Land Conservation Act 1945* *Wildlife Conservation Act 1950*

Appendix 2: List of extra resources available

A website has been designed to accompany this document. This website can be found at: *www.environment.gov.au/nvf*. The website contains background information and additional resources that may further assist people's understanding of how this framework was developed and how it can be implemented. The resources will be updated and added to throughout the implementation phase of this framework.

The resources available on the website include, but are not limited to:

- information on how this framework has been developed
- information on linkages of this policy with other policies
- links to government websites for each of the states and territories and the Australian Government
- further reading recommendations
- full case studies that illustrate current and past actions to improve native vegetation management
- links to websites that provide information for land managers on good practices in native vegetation management.

Glossary

Adaptation: Responses that decrease the negative effects of change and capitalise on positive opportunities associated with impacts.

Adaptive management: Adaptive management involves taking a structured, iterative approach to finding the best options for action in the face of uncertainty and risk. Adaptive management includes monitoring change over time, so that the results of management choices can be assessed and changes made if needed to improve future management.

Aquatic plants: Plant species or communities that are dependent on periodic or permanent inundation. This includes:

- aquatic plants that are adapted to growing in, on or under water
- semi-aquatic (amphibious) plants that have adapted to growing within a recurrently inundated environment for example, floodplains and mudflats.

For the purposes of the framework, this does not include marine plants. As it is difficult to draw a clear distinction between aquatic plants and marine plants, for example, in estuaries and inter-tidal zones, it is the responsibility of the jurisdictions to make a sensible distinction between aquatic and marine zones.

Biodiverse planting: A planting or direct seeding of Australian native and regionally appropriate species in order to produce both biodiversity and carbon benefits. These plantings will create vegetation communities that consist of:

- species found in the equivalent native vegetation type within the regional vicinity
- a vegetation structure that is appropriate for the immediate landscape
- species suited to anticipated climate change.

Biodiversity (biological diversity): Variability among living organisms from all sources (including terrestrial, aquatic, marine and other ecosystems and ecological complexes of which they are part), at all levels of organisation, including genetic diversity, species diversity and ecosystem diversity.

Bioregions: Large, geographically distinct areas of land with common characteristics such as geology, landform patterns, climate, ecological features and plant and animal communities. See also Interim Biogeographic Regionalisation for Australia (IBRA).

Carbon markets: A generic term for a trading system in which governments or private organisations may buy and sell carbon credits in an effort to meet limits on emissions. This term includes both compliance carbon markets, where liable parties must meet carbon emissions obligations, and/or voluntary carbon markets.

Carbon sequestration: In relation to vegetation, this is the process of removing carbon dioxide from the atmosphere through photosynthesis and to build organic matter (biomass). This process can lead to significant stores of carbon.

Climate change: Any long-term significant change in the 'average weather' that a given region, or the Earth as a whole, experiences. In recent usage, the term 'climate change' often refers to changes in the contemporary climate due to human activities, primarily the emission of greenhouse gases to the atmosphere (this is sometimes called 'anthropogenic climate change' or 'global warming').

The Intergovernmental Panel on Climate Change (IPCC) defines climate change as a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically decades or longer). It can be due to natural internal processes or external forces, or to persistent anthropogenic changes in the composition of the atmosphere or in land use.

Community: a societal group of any size whose members reside in a specific locality, share government and have cultural and historic heritage (*The Macquarie Dictionary*; Delbridge et al. 1991)

NOTE — Also see vegetation community, when pertaining to plants or vegetation.

Condition: The capacity of a native vegetation community to support the full range of native species that might be expected to use a stand of vegetation of a particular type under natural circumstances. Any native vegetation patch can be assessed relative to the average characteristics of a mature and long undisturbed patch of the same vegetation type (Caring for our Country 2011 DSEWPAC 2011b).

Condition Change: The measure of the shift of the current state of a vegetation community or ecosystem from a set reference state, which may have been altered by a threatening processes, when considered at a patch or landscape scale (Cofinas et al. 2001; Williams 2005; Casson et al. 2009).

Connectivity: The capacity of natural areas in the landscape to allow ecological movement and function, through the linkage of similar but separated vegetation stands by corridors of like vegetation, or a series of close habitat areas arranged like 'stepping stones'. Connectivity is built around core habitats, some of which may be protected in reserves that are linked and buffered across different land uses in ways that maintain critical ecosystem processes and thereby strengthen the resilience of the system. (NRMMC 2010a; Williams 2005).

Conservation: In relation to biodiversity, conservation is the protection, maintenance, management, sustainable use, restoration and improvement of the natural environment. In relation to natural and cultural heritage, conservation is, generally, keeping in safety or preserving the existing state of a heritage resource from destruction or change.

Corridors: Connections across the landscape and between habitat patches that are used by all living things. Corridors are one way of achieving various types of connectivity across landscapes and meeting the diverse needs of organisms at multiple scales. Corridors allow the movement of organisms seeking resources and breeding opportunities; facilitate the distribution of species, for example, seeking suitable climatic conditions; and support ongoing ecological processes that underpin healthy environments.

Country: In Indigenous contexts, country is used to refer to land and seas associated with a particular Indigenous group that has a traditional association with that land or sea in the form of interests, responsibilities and traditional connection. For Aboriginal people, 'country' includes all living things, incorporating people, plants, animals, dreaming stories and creation spirits.

Degradation: In the context of environmental values, degradation refers to a loss of quality or functionality. It is used in various ways. Forms of land degradation include salinity, wind erosion, water erosion, soil acidity and waterlogging. Degradation of vegetation may refer to loss of extent, condition or capacity to self-regenerate.

Ecological communities: Naturally occurring groups of plants and animals. Their species composition can be determined by factors such as soil type, position in the landscape, climate and water availability.

Ecological processes: Actions and events that shape ecosystems. Understanding ecological processes—both continuous processes like nutrient cycling and carbon sequestration, and periodic or irregular disturbances like fire—is the key to the development and implementation of ecologically sustainable management.

Ecologically sustainable development (ESD): 'Using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased' (COAG 1992). Principles include:

- decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations
- if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
- consideration of inter-generational equity, such that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
- conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making
- improved valuation, pricing and incentive mechanisms should be promoted (s.3A, EPBC Act 1999, 2006).

Ecologically sustainable management: Management practices that attempt to meet economic objectives in ways that do not degrade the environment; using, conserving and enhancing resources so that ecological processes in ecosystems are maintained (Burgman & Lindenmayer 1998).

Ecologically sustainable use: The use of natural resources within their capacity to sustain natural processes while maintaining the life-support systems of nature and ensuring that the benefit of the use to the present generation does not diminish the potential to meet the needs and aspirations of future generations (EPBC Act 1999, Section 528). Unsustainable use is that which exceeds the capacity of the system for renewal and results in longer-term decline or depletion. Sustainability Principles are listed in 'Ecologically Sustainable Development'

Ecosystem: An ecosystem is a dynamic combination of plant, animal and micro-organism communities and their non-living environment (e.g. soil, water and the climatic regime) interacting as a functional unit. Examples of types of ecosystems include forests, wetlands, grasslands and tundra.

Ecosystem approach: See Whole–of–ecosystem approach.

Ecosystem functions: The means by which ecosystems generate supporting, providing, regulating and cultural services, independent of their value to humans. They include support for living things and the soil, air, water and processes they depend on, such as pollination, and their interrelationships with the surrounding landscape. For example, soil formation is a supporting function generated (in part) through microbial processing of organic and non-organic matter. Biodiversity plays a fundamental role in — and depends on — these complex, interlinked functions.

Ecosystem resilience: The 'resilience' of an ecosystem refers to its capacity to adapt to changes and disturbances, such as climate change and natural random events (e.g. fire or flooding) respectively, yet retain its basic functions and structures noting that this may involve some change in its character (such as species composition). A resilient ecosystem can adapt to shocks and surprises, including climate change, and rebuild itself when damaged. Resilient systems are more open to multiple uses and are more able to recover from management mistakes (Caring for our Country 2011–2012; Webb 2007).

Ecosystem services: The services, essential to human survival and wellbeing, that natural ecosystems provide through their structures and functional processes. Ecosystems maintain the atmosphere; provide clean water; control soil erosion, pollution and pests; pollinate plants; and provide many other essential processes.

Edge effects: A term used to describe any changes for vegetation and wildlife that occur as a result of one type of vegetation sharing a border with another naturally, or as a result of human activity. Edge effects can include changes such as an increase in species diversity at an edge; or a negative influence of a disturbed habitat edge on the condition of a habitat further from the edge, or on species that use the interior habitat. Forest grading into woodland, pasture abutting forest, burnt and unburnt areas, and streamside vegetation passing through an arid zone are examples of ecosystem boundaries where edge effects may occur.

Endemic: Having a natural distribution confined to a particular geographic region.

Environment: Includes ecosystems and their constituent parts, including people and communities; natural and physical resources; the qualities and characteristics of locations, places and areas; and their social, economic and cultural aspects.

Extent: The extent of native vegetation can be defined by the geographic coverage of vegetation types within specific regions such as a bioregion or catchment (Williams 2005).

Fire regime: A fire regime in the Australian vegetated landscape is defined by the intervals between fires and frequency, the intensities of the fires, their extent, and the seasons during which the fires may occur. It can also refer to the management system applied to managing fires to maintain vegetation extent and condition across the landscape over time, as well as to protect human assets and safety (Gill et al. 1999; Gill 1975; Gill et al. 1981).

Fragmentation: Fragmentation, in this framework, is used to describe the result of removal (usually by clearing) of large parts of a natural area, resulting in the retention of only small parts (fragments or remnants) of habitat. Fragmentation is an issue for marine and other aquatic environments as well as terrestrial environments.

Habitat: The locality or natural home in which a plant, an animal or a group of closely associated organisms live.

Indigenous peoples: This term is inclusive of all Aboriginal and Torres Strait Islander peoples in Australia.

Interim Biogeographic Regionalisation for Australia (IBRA): The IBRA is a classification of Australia's landscapes based on climate, lithology/geology, landform, native vegetation and species information from fieldwork, mapping and relevant reports. There are 85 IBRA bioregions and 403 subregions across Australia.

Invasive species: A species occurring, as a result of human activities, beyond its accepted normal distribution, which threatens valued environmental, agricultural or personal resources by the damage it causes.

Landscapes: All the natural features of land or territory encompassed in a single view (for example, fields, hills, forests and water) that distinguish one part of the Earth's surface from another.

Landscape-scale: A scale of planning, implementation or reporting that typically incorporates areas larger than individual sites, properties or habitats, and often includes a mix of different vegetation types and landforms ranging across several sub-catchments or environmental domains.

Marine plants: See Aquatic plants.

Market-based instruments: Market-based instruments encourage behaviour through price signals rather than through explicit directives or command and control regulation. Trading-based schemes are a subset of market-based instruments. They focus on instruments involving trading and include cap and trade schemes, auctions and information disclosure. They do not, however, include taxes and subsidies.

National Reserve System (NRS): Australia's network of protected areas that conserve examples of our unique landscapes, native plants and animals for future generations. The National Reserve System includes more than 9000 protected areas. It is made up of national parks, Indigenous lands, reserves run by non-profit conservation organisations, and ecosystems protected by landholders on private properties.

Native planting: Plant species, indigenous to the site or region, which have been regenerated with human assistance following disturbance (Williams 2005). This definition includes the use of seed, seedlings, cuttings and other means of human-assisted revegetation and regeneration.

Native Vegetation: For the purposes of this framework, native vegetation is all indigenous terrestrial or aquatic plants in an area, incorporating all living and non-living components. This includes Australia's diverse natural vegetation and permanent native plantings for biodiversity and sustainable land management purposes. In the context of native vegetation, indigenous refers to vegetation that is within its natural distribution.

Offset: Offsets (also termed environmental offsets and biodiversity offsets) are, broadly, a measurable conservation outcome from actions taken to compensate for environmental impacts. Offsets address the remaining impacts — 'residual impacts' — after appropriate prevention and mitigation measures to, for example, address the impacts of a project development or land use action. Offsets may be referred to as 'direct offsets' where they directly compensate the net environmental loss from a proposal by providing matched on-ground protection and improved conservation outcomes. 'Indirect offsets' or 'secondary offsets' are a range of other measures that can complement direct offsets for an overall positive cumulative benefit relevant to the nature of the residual impact, such as by improving knowledge, understanding and management of those environmental values. Approaches to environmental offsetting vary across the jurisdictions and are usually undertaken as a requirement under planning or conservation law (Business and Biodiversity Offsets Programme 2009; Department of Sustainability, Environment, Water, Population and Communities 2011c; The Macquarie Dictionary 1991).

Precautionary principle: A principle of ecologically sustainable development whereby a lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible environmental damage (EPBC Act 1999, Section 391 (2)). In determining the precautionary action, consideration should also be given to the magnitude, nature and severity of potential harm as well as an assessment of costs and benefits (from economic, environmental, social and health perspective).

Refugia: A refugium is an area that has escaped or will escape changes occurring elsewhere and continues to provide a suitable habitat for a species that would not be able to survive under prevailing conditions. Climate change refugia is used in reference to areas that may provide habitat for species displaced as the climate changes (NRMMC 2010a).

Remnant vegetation: One or more areas of largely intact (structurally and/or compositionally) native vegetation that remains after the removal (usually by clearing) of parts of a natural area.

Resilience: See Ecosystem resilience.

Restoration: The restoration or reconstruction of native vegetation to its former species composition and condition (Williams 2005).

Revegetation: The re-establishment of vegetation in areas that have been cleared or highly modified. The mix of plant species may not be the same as that of the original vegetation (Williams 2005).

Sequestration: See Carbon sequestration.

Species: A level of biological classification comprising one or more populations of individuals capable of interbreeding to produce fertile offspring.

State of the Environment (SoE) Reporting: In Australia, regular 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. Generally, these reports provide a scientific assessment of environmental conditions, focusing on the effects of human activities, their significance for the environment and societal responses to the identified trends.

Strategic Assessment (EPBC Act): Under Section 146 of the *Environment Protection and Biodiversity Conservation Act* (EPBC Act 1999), the Australian Government Environment Minister may agree to assess the impacts of actions under a policy, plan or program including but not limited to:

- regional-scale development plans and policies
- large-scale industrial development and associated infrastructure
- fire, vegetation/resource or pest management policies, plans or programs
- water extraction/use policies
- infrastructure plans and policies
- industry sector policies.

Within this context a strategic assessment normally applies to multiple natured projects that would otherwise be assessed on a case-by-case basis under Part 8 of the EPBC Act (which deals with assessing the impacts of EPBC Act 'controlled actions').

A strategic assessment is a collaborative assessment process between the Australian Government and an appropriate proponent. Proponents can include: state governments; local governments; urban development industry; and, mining and resource companies. Specific advantages of undertaking a strategic assessment include the early consideration of matters of national environmental significance (NES) in planning processes (EPBC Act 1999).

Strategic plan: A formulation of policy about land use and development in an area. Strategic plans can include threat-based plans, such as a weeds management plan, or area-based plans, such as regional natural resource management plans. Strategic plans can also be made under relevant legislation at other levels of government including states and territories, NRM regions, local governments, organisations, industry or land managers.

Sustainable: see Ecologically sustainable use.

Sustainable use: see Ecologically sustainable use.

Sustainable land management practices: see Ecologically sustainable management.

Vegetation community: An assemblage of plant species that have a floristically uniform structure and composition, often described by its upper storey dominant species, that form a repeating 'unit' across the landscape. (Australian Native Vegetation Assessment 2001; Williams 2005; NVIS 2004).

Whole-of-ecosystem approach: A whole-of-ecosystem approach takes into account the essential structure, processes, functions and interactions among organisms and their environment at multiple levels of biological organisation. It recognises, also, that humans, with their cultural diversity, are an integral component of many ecosystems. The main goals of such an ecosystem approach are to:

- maintain viable populations of all native species in situ
- represent, within protected areas, all native ecosystem types across their natural range of variation
- maintain evolutionary and ecological processes
- manage over periods of time long enough to maintain the evolutionary potential of species
- accommodate human use and occupancy within these constraints.

The Conference of the Parties to the Convention on Biological Diversity (United Nations 1992 COP 5 Decision V/6) has described the 'ecosystem approach' as 'a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way'. As the focus on equity is beyond the scope of this framework, the 'whole-of-ecosystem' approach is used in this framework to encompass the ecological (as opposed to social and economic) elements of the 'ecosystem approach' concept.

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