NSW **National Parks and Wildlife Service**

New South Wales National Parks Establishment Plan 2008

Directions for building a diverse and resilient system of parks and reserves under the National Parks and Wildlife Act

Department of **Environment & Climate Change** NSW

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Inquiries about this plan should be directed to the Protected Areas Policy and Programs Branch, Parks and Wildlife Group, Department of Environment and Climate Change NSW.

The National Parks and Wildlife Service (NPWS) is now part of the Department of Environment and Climate Change NSW (DECC).

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Minister's foreword

The formation of the National Parks and Wildlife Service (NPWS) in 1967 brought together from across New South Wales a mix of former state parks and nature reserves that had been established over the previous 90 years.

That fledgling reserve system has since grown with the addition of hundreds of small to large parcels of land in all parts of the state, including an expansion in the reserve system of some 50% over the last 10 years.

Today the NPWS, now a part of the Department of Environment and Climate Change (DECC), manages a reserve system covering nearly 6.7 million hectares or 8.3% of the state. This 'DECC' reserve system includes national parks, nature reserves, state conservation areas, Aboriginal areas, regional parks, historic sites, and certain Crown reserves and karst conservation reserves, all complemented by a system of marine parks and aquatic reserves.

Much remains to be done, however, if our system of reserves is to be truly comprehensive in protecting a representative sample of the state's ecosystems.

The NSW State Plan recognises the important role of parks and reserves in achieving the Government's natural resource targets to conserve native flora, fauna and wetlands, increase opportunities for nature-based and cultural tourism and recreation, and improve community wellbeing.

DECC's parks and reserves protect a diversity of native flora and fauna and water catchment areas. They are vital in tackling the decline of biodiversity, mitigating the effects of climate change on our natural environment and protecting the health of whole landscapes. Indeed, a securely protected and well-managed public reserve system is an essential component of the infrastructure needed by societies to ensure their long-term sustainability.

The DECC reserve system also conserves many significant Aboriginal cultural heritage sites and artefacts, historic buildings, scenic landscapes and geological heritage.

The state's parks and reserves provide for a wide range of uses, including tourism and recreation, scientific study and access to cultural sites. The purchase of private lands for inclusion in the DECC reserve system continues to significantly increase the extent of public estate available to the community to access and enjoy. There is now also a wealth of evidence that public parks and reserves are a cost-effective form of conservation which brings positive economic and social benefits to regional communities.

Being surrounded by national park, whether it be the rugged and wild landscapes of the World Heritage Blue Mountains or the breathtaking rainforests of the north coast, is often a seminal experience that convinces more people to care for the environment than any other.

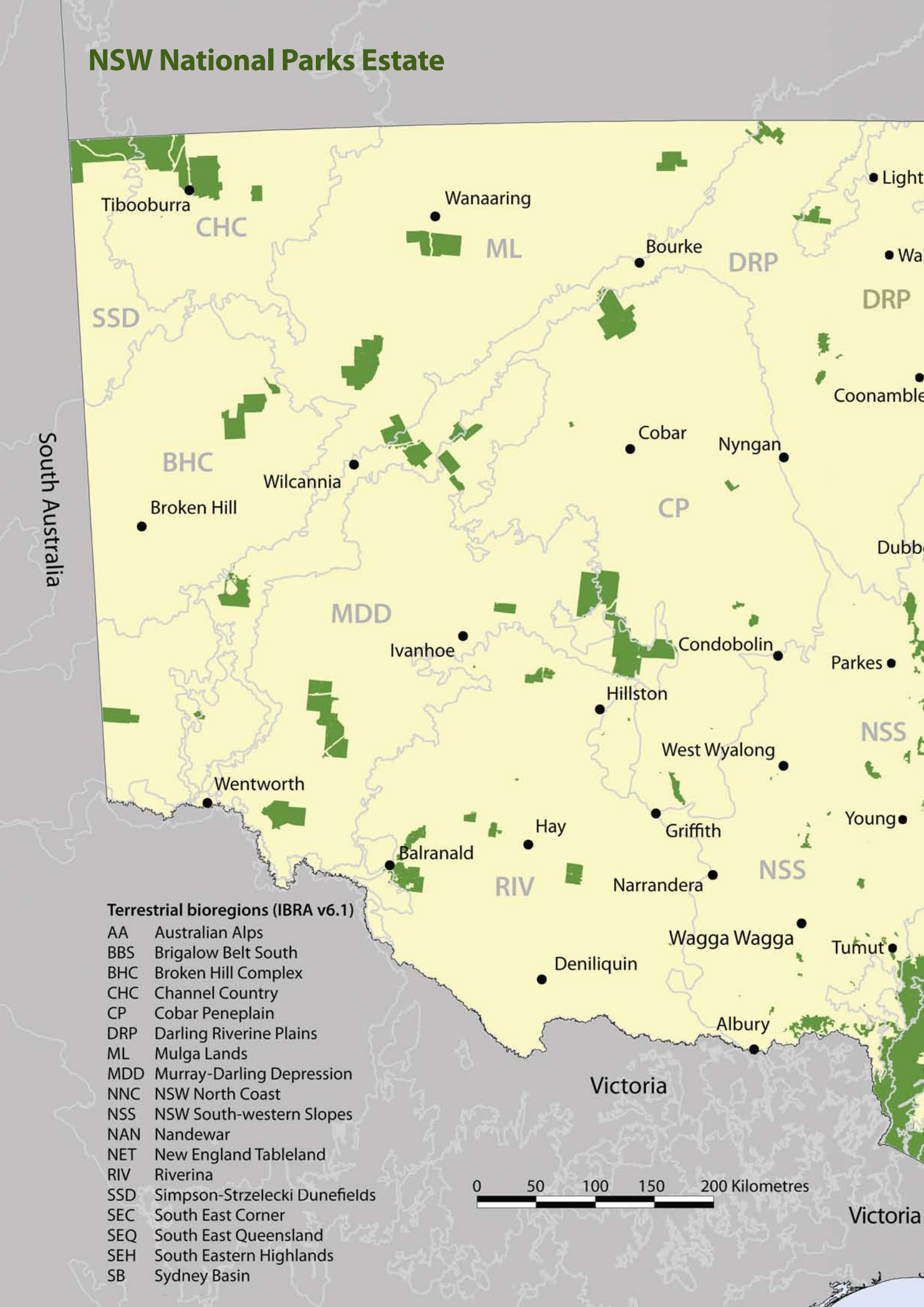
With all of this in mind, it is an appropriate time to acknowledge the value of our parks and reserves and chart the directions for NSW to enhance the DECC reserve system over the next decade and beyond.

This National Parks Establishment Plan identifies priorities for building the DECC reserve system in each biogeographic region of NSW. It recognises three stages in reserve system development – establishing new reserve nodes, building up reserves around these nodes, and fine-tuning reserve boundaries – and acknowledges the long-term nature of the task with a 50-year outlook.

Finally, the plan recognises that the establishment and management of DECC public reserves alone cannot ensure the achievement of healthy and sustainable landscapes. This will only be possible through a broad range of conservation activities on both public and private lands across the many unique and varied landscapes of the state.

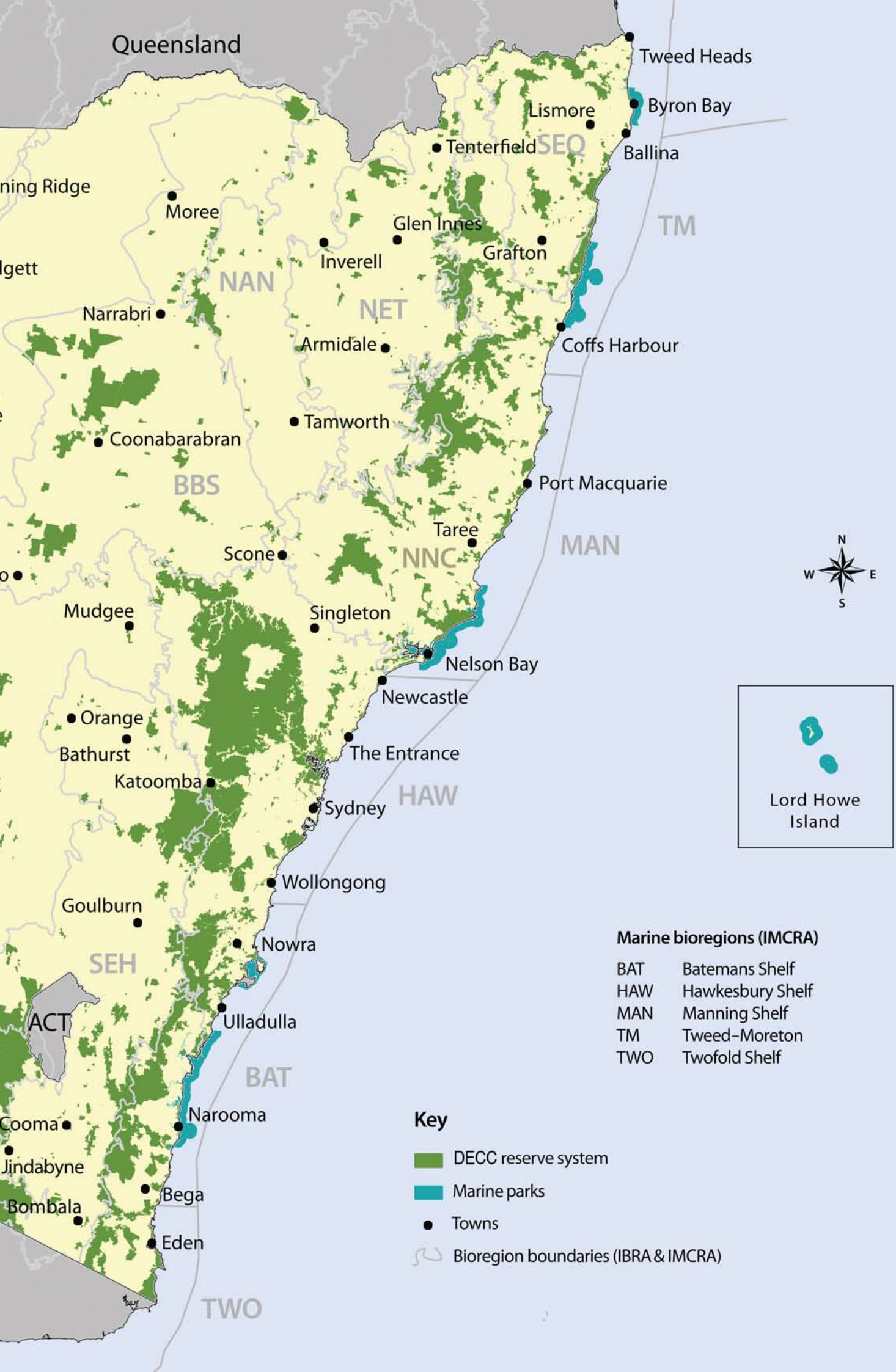
Verity Firth MP
Minister for Climate Change and the Environment

NSW National Parks Estate



Terrestrial bioregions (IBRA v6.1)

AA	Australian Alps
BBS	Brigalow Belt South
BHC	Broken Hill Complex
CHC	Channel Country
CP	Cobar Peneplain
DRP	Darling Riverine Plains
ML	Mulga Lands
MDD	Murray-Darling Depression
NNC	NSW North Coast
NSS	NSW South-western Slopes
NAN	Nandewar
NET	New England Tableland
RIV	Riverina
SSD	Simpson-Strzelecki Dunefields
SEC	South East Corner
SEQ	South East Queensland
SEH	South Eastern Highlands
SB	Sydney Basin


Queensland
Tweed Heads
Byron Bay
Lismore
Ballina
Tenterfield
SEQ
TM
ning Ridge
Moree
Glen Innes
Grafton
Inverell
lgett
NAN
NET
Narrabri
Armidale
Coffs Harbour
Tamworth
Coonabarabran
BBS
Port Macquarie
Taree
MAN
Scone
NNC
Mudgee
Singleton
Nelson Bay
Newcastle
Orange
Bathurst
The Entrance
Katoomba
HAW
Sydney
Wollongong
Goulburn
Nowra
SEH
ACT
Ulladulla
BAT
Narooma
Cooma
Jindabyne
Bega
Bombala
Eden
TWO
N
W
E
S
Lord Howe Island
Marine bioregions (IMCRA)
BAT Batemans Shelf
HAW Hawkesbury Shelf
MAN Manning Shelf
TM Tweed–Moreton
TWO Twofold Shelf
Key
DECC reserve system
Marine parks
Towns
Bioregion boundaries (IBRA & IMCRA)

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DECC/R. Dick

Growee Gulph in the wilds of Wollemi National Park, west of Sydney

Executive summary

Land for future conservation reserves

Almost 6.7 million hectares of New South Wales is protected in conservation reserves managed by the National Parks and Wildlife Service (NPWS) within the Department of Environment and Climate Change (DECC). These 'DECC' reserves have been established under the *National Parks and Wildlife Act 1967* and include national parks, nature reserves, state conservation areas, karst conservation reserves, historic sites and Aboriginal areas.

This network of nearly 800 individual areas covers more than 8% of the state. It is the legacy of 130 years of far-sighted actions by governments, volunteer groups and individuals, which began with the establishment of Royal National Park, the world's second national park, in 1879.

But the job of building this public reserve system is incomplete. Many of the state's ecosystems, especially those west of the Great Dividing Range and on coastal lowlands, are poorly represented in the park network.

To conserve the full diversity of this state's landscapes, fauna and flora and to protect places of important Aboriginal and non-indigenous cultural heritage, more parks and reserves are needed. Furthermore, many existing reserves require augmentation to improve their size and configuration in order to better buffer and manage the values they were established to protect. Recent scientific studies by CSIRO (2008) have also indicated that the establishment of a diverse and resilient reserve system will be essential to minimising the losses to biodiversity that climate change will inevitably bring.

To this end, the NSW Government is committed to the long-term objective of building a fully comprehensive, adequate and representative reserve system and providing increased opportunities for public nature-based recreation in a more diverse range of environments across NSW.

Reserve-building and the State Plan

The NSW State Plan recognises the important roles played by the reserve system in achieving the priorities in its Environment for Living theme. The goals enunciated in this National Parks Establishment Plan will contribute to meeting the following State Plan priorities:

- better outcomes for native vegetation, biodiversity, land, rivers and coastal waterways (Priority E4)
- an increase in visits to parks and reserves (Priority E8)
- improved health and education for Aboriginal people (Priority F1)
- cleaner air and progress on greenhouse gas reductions (Priority E3)
- increased business investment in rural and regional NSW (Priority P6).

National Parks Establishment Plan 2008

DECC's National Parks Establishment Plan identifies priorities for building the state's parks and reserve system in each biogeographic region of NSW. It recognises that this is a long-term mission that will possibly take up to 50 years to achieve.

The plan recognises three stages in reserve system building:

- the establishment of new reserve nodes
- building-up existing reserves around these nodes
- fine-tuning reserve boundaries.

The plan also acknowledges that the establishment and management of DECC public reserves alone cannot ensure the achievement of healthy and sustainable landscapes, and that this can only occur through a broad range of conservation activities across the whole landscape on both public and private land. DECC is actively involved in a wide range of these activities and recognises that reserves are a vital component of this vision.

The plan focuses on the next 10 years and will broadly involve three parallel strategies:

- the establishment of new reserves in many parts of far western and central western NSW, where reserves currently protect less than 5% of the landscape

- the building-up of existing reserves on the western slopes and tablelands
- an active program of fine-tuning existing reserve boundaries along the coast and coastal ranges where reserves currently protect nearly 30% of the landscape, but where the poor configuration of many reserves complicates and impairs their effective management.

More specifically, the plan recognises the following themes as the priorities for building the DECC reserve system over the next decade:

- **unrepresented ecosystems and habitats** in all parts of NSW, particularly those most under threat from climate change, future development pressures or loss of natural river flows
- **wetlands, floodplains, lakes and rivers** in western NSW along the upper Darling River and its tributaries, the Murray and Murrumbidgee rivers, and on the tablelands, coastal floodplains and estuaries, as well as additions to existing wetland reserves in all parts of NSW that consolidate their boundaries and improve the protection of their wetland environments
- **critical landscape corridors** which facilitate the daily and seasonal movement of animals across the landscape and the intergenerational translocation of plants and animals in response to gradual environmental changes, such as climate change, as well as areas which provide access to and connect places of cultural value
- **lands within important water catchments** that protect important downstream aquatic ecosystems, such as high conservation value coastal lakes, wetlands, streams, estuaries and coastal near-shore marine environments
- **culturally important places** with aesthetic, historic, scientific or social value for past, present or future generations particularly focusing on –
  - areas of ongoing Aboriginal cultural use
  - areas which are significant to Aboriginal communities for the objects they contain or landscape features of significance
  - lands which are outstanding examples of cultural heritage which are poorly protected, threatened, not accessible to the community, or are of particular aesthetic and recreational value
- **places of geological significance**, including karst areas
- **areas important for effectively and efficiently managing existing reserves** and which buffer reserves from surrounding land uses and climate change.

DECC

Enjoying the grandeur of Blue Mountains National Park

1. Introduction

'CAR' reservation: A long-term goal

The NSW State Plan reinforces the NSW Government's long-term commitment to developing a world-class protected area network. A critical foundation of this network is a secure and professionally managed public reserve system, complemented by additional conservation efforts on private and other public lands.

In line with a number of other Australian states and countries, a specific NSW Government objective is to build a comprehensive, adequate and representative public reserve system (known as a 'CAR' reserve system).

The NSW Department of Environment and Climate Change (DECC), incorporating the National Parks and Wildlife Service, has prepared this National Parks Establishment Plan to outline future directions for building the state's terrestrial public reserve system under the *National Parks and Wildlife Act 1974*, over the next 10 years. It reflects the objectives of the State Plan and established national and international conservation policy agreements and frameworks.

This plan does not cover the establishment of protected areas in the marine environment. DECC is working with the Marine Parks Authority to establish a representative system of marine parks along the NSW coast and also manages a series of aquatic reserves.

Significantly, the National Parks Establishment Plan acknowledges the long-term nature of the reserve-building task and recognises that meeting the CAR objective may take a number of decades, possibly up to 50 years.

Within this context, the plan identifies what has been achieved to date in building the DECC public conservation reserve system, what else needs to be done, and where effort will be directed over the next decade.

NSW protected areas

Public conservation reserves managed by DECC: national parks, nature reserves, state conservation areas, Aboriginal areas, regional parks, historic sites, certain Crown reserves, karst conservation reserves

Other public conservation reserves: flora reserves managed by the Department of Primary Industries and some Crown reserves administered by the Department of Lands

Marine parks managed by DECC with input from the Department of Primary Industries through the Marine Parks Authority

Aquatic reserves managed by DECC with the cooperation of the Department of Primary Industries

Private lands under conservation arrangements: conservation agreements, wildlife refuges, Aboriginal places and wilderness protection agreements administered by DECC and other lands with conservation covenants

Private lands owned by non-government conservation organisations: lands managed primarily for conservation by organisations such as the Australian Bush Heritage Trust and Birds Australia

Role of the DECC public reserve system

The three primary roles of the DECC public reserve system are to:

- protect the full range of habitats and ecosystems, plant and animal species, and significant geological features and landforms found across the state
- protect areas of significant cultural heritage, including places, objects and features of significance to Aboriginal people, as well as rural, unique and working heritage; places of scenic beauty and landscapes and natural features of significance; wilderness areas and wild rivers; water catchments; popular places for nature-based recreation; and certain icons and sites of national significance.
- provide opportunities for public enjoyment including nature-based recreation and education in a diverse array of landscapes in all regions of NSW.

What is cultural heritage?

Cultural heritage comprises landscapes, places, objects, customs and traditions (and their contexts) that communities have inherited from the past and wish to conserve for current and future generations. It involves the physical or tangible sites, places and objects, as well as intangible values and cultural practices associated with these landscapes, sites, places and objects.

All landscapes contain a variety of cultural values and the associations may be of Aboriginal or non-Aboriginal origin or shared between Aboriginal and non-Aboriginal communities.

When natural elements of the landscape acquire meaning for a particular group, they may also become cultural heritage. This 'meaning' can also include aesthetic value. Aboriginal people have culturally specific associations with the landscape and these may include custodial relationships with particular landscapes (NPWS 2002).

The *Australian Natural Heritage Charter* (Australian Committee for IUCN 1996) recognises a continuum between natural and cultural heritage: 'clear separation of cultural and natural values can be difficult and more than one layer of values may apply to the same place'.

The National Parks Establishment Plan also reflects the NSW Government's commitment to implementing *Directions for the National Reserve System* (NRMMC 2005), which was endorsed in 2004 by the Commonwealth, States and Territories through the Natural Resource Management Ministerial Council. The plan is, in part, a response to Direction 10 of the Directions Statement, which commits the Commonwealth, and States and Territory governments to develop National Reserve System Implementation Plans for priority bioregions.

Outside the reserve system, DECC will continue to work with Catchment Management Authorities, other government agencies and landholders to establish conservation agreements over private and other public lands which contain important sites of natural and cultural heritage.

What is a bioregion?

Bioregions (an abbreviation of 'biogeographic regions') are large regions of relatively similar geology, geography and geomorphology. Each bioregion supports a suite of native plants and animals distinctive from those in adjoining regions.

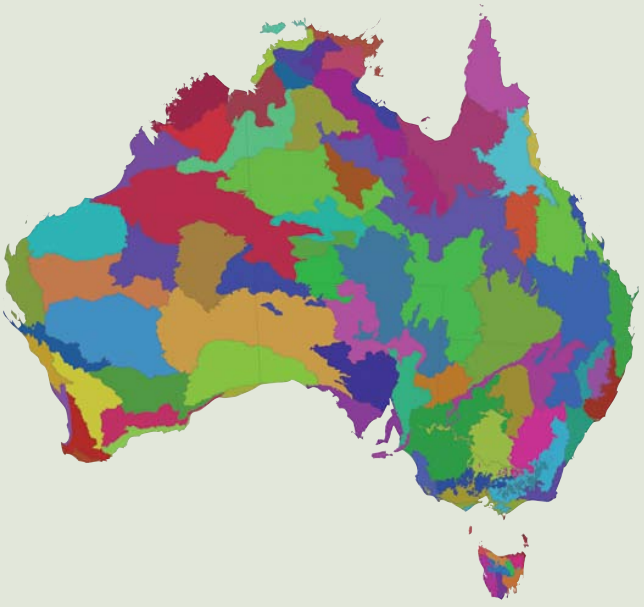
Bioregions are a useful way of configuring Australia into its component biological and geographical parts. They have proved a valuable tool for broadscale land-use, natural resource and biodiversity conservation planning, including reserve system planning.

The Interim Biogeographic Regionalisation of Australia or 'IBRA' (Thackway and Cresswell 1995; Commonwealth of Australia 2005) delineates Australia's bioregions.

Because IBRA ignores state and territory boundaries, it is an excellent framework for planning, monitoring and reporting many types of natural resource management programs, enabling meaningful comparisons and measurements to be made across neighbouring states or territories.

Each bioregion has also been more finely broken up into component *sub-bioregions* and in NSW distilled even further into mapped *NSW Landscapes* (or 'Mitchell' Landscapes). The map of NSW in the centre of this plan shows the state's bioregions as do the inset maps in Chapter 5.

The Interim Marine and Coastal Regionalisation for Australia or 'IMCRA' is a complementary set of marine bioregions developed for marine natural resource planning (Commonwealth of Australia 2006).



Map 1: Australian terrestrial bioregions
(Commonwealth of Australia 2005)

2. The conservation challenge

Conservation collaboration

Collaboration between all those involved in conservation is an important challenge. NSW Government agencies, local government, community organisations and private individuals must work together to ensure the long-term protection of the state's natural and cultural heritage.

State and Federal governments have a charter to:

- establish and manage a secure system of public conservation reserves
- ensure there are appropriate mechanisms and legislation to maintain satisfactory protection of environmental and cultural values across the whole landscape
- provide opportunities for private landowners to enter into conservation agreements on their lands
- assist community groups and individuals with environment protection and restoration projects and cultural maintenance and renewal.

DECC/P. Matthews

Local government, meanwhile, uses local environmental plans to zone important areas for environment protection and ensure that local development complies with their provisions.

Catchment Management Authorities also guide environment protection in catchments, while community groups and individuals both advocate and implement programs which enhance the conservation of natural and cultural heritage.

The DECC public conservation reserve system is a cornerstone of these collective conservation efforts. Publicly owned and professionally managed, it provides the highest level of long-term security for the maintenance of environmental values.

CSIRO (2008) has also recently advised that improving the integration of these collective efforts across the landscape, based on a bioregional planning framework, is a key strategy that needs to be adopted to help minimise the effects of climate change on biodiversity.

Importance of public conservation reserves

A central role of public conservation reserves is to conserve biodiversity. Biodiversity is valued because of the ecosystems it sustains, the economic worth of its products, its intrinsic and aesthetic values, and the contribution it makes to our cultural and spiritual lives.

Since the European settlement of Australia, the natural environment of NSW has been dramatically modified. Large parts of the coastal lowlands, tablelands, western slopes and central western plains have been cleared of their original native vegetation and much of far western NSW has been heavily grazed by introduced herbivores (sheep and cattle). Many forests were selectively logged for their timber and most larger rivers modified through water extraction or storage. The introduction and spread of many weeds and feral animals has occurred across all landscapes.

Most of these changes have caused a substantial and ongoing loss of biodiversity with 75 species of plants and animals now extinct and over 850 more considered endangered or vulnerable in NSW. Climate change will further modify these threatening processes and in many cases intensify their already significant effects.

The establishment and management of a robust public conservation reserve system which includes and protects a wide range of environmental types will be a key element in mitigating these many threats to biodiversity (CSIRO 2008).

In addition to conserving biodiversity, public conservation reserves also protect:

- water catchment quality
- Aboriginal cultural heritage sites and artefacts
- historic heritage buildings and sites
- geological heritage
- resources for scientific study and education.

While protecting these natural and cultural assets, public conservation reserves benefit society in many other ways:

- They maintain Aboriginal cultures by providing or restoring access to places and resources for cultural and spiritual practices. This contributes to the achievement of NSW State Plan Priority F1 to improve the health and education of Aboriginal people.
- They connect people from diverse cultures with their heritage.
- They provide opportunities for rehabilitating land and protecting existing vegetation from land clearing, which helps to achieve Priority E3 of the State Plan for cleaner air and progress on reducing greenhouse gases.
- They afford recreational opportunities, which can improve community wellbeing and contribute to meeting the State Plan Priority E8 target of an increase in visits to parks and reserves.
- They provide public access to diverse landscapes.
- They contribute to achieving State Plan Priority P6 to increase business investment in rural and regional NSW. This is because regional and local economies benefit from the government expenditure on reserve management, capital works and the provision of jobs for local people, as well as the expenditure by visitors to reserves.
- They improve the amenity of adjoining lands through scenic and environmental protection and increased recreational opportunities associated with them.
- They provide opportunities to develop new biochemical products of economic and social value from the genetic diversity of the species they protect.

Public ownership of the conservation reserve system ensures:

- security, resilience and continuity of protection and management in perpetuity
- ongoing public financial investment for management
- professional management that is publicly accountable
- participation by the community in management planning
- a focus and reference point for building and strengthening conservation partnerships between government and the community
- community access to most areas, often with the provision of facilities for outdoor recreation.

As most private land is not normally accessible to the general community, the purchase of private lands by DECC for inclusion in its reserve system in all regions of the state increases the public's ability to access and enjoy many more areas of NSW. Nearly one million hectares of formerly private and leasehold land has been brought into public ownership within the DECC reserve system in this way in over 500 localities throughout NSW.

J. Cooper

Reservation and active management of the wetlands of inland NSW are assisting the survival of many threatened and vulnerable species, such as the brolga.

Climate change and the reserve system

CSIRO (2008) reports that the effects of climate change will lead to both the loss and gain of exotic and native plant and animal species, as well as an alteration to fire regimes and hydrology, and changes in land uses surrounding reserves. Based on its premise that change in the make-up of reserves will be an inevitable consequence of climate change, the CSIRO stresses the importance of a shift by reserve managers from the objective of 'preventing ecological change' to the new challenge of 'managing change to minimise (biodiversity) loss'.

Despite the substantial impacts that climate change will have on individual reserves, however, the CSIRO also concludes that, collectively, well-planned and managed comprehensive reserve networks will present a very strong buffer to the effects of climate change, helping to significently minimise the loss of biodiversity.

BGT/J. Plaza

Protecting a wide range of ecosystem types, such as this poorly-reserved bladder saltbush shrubland near Broken Hill, will help minimise climate change impacts on biodiversity.

In particular, the CSIRO report considers that the reserve planning objective of sampling the full range of ecosystem types – an approach well-established by DECC reserve system planners – 'provides an excellent basis for developing a protected area system that effectively and practically conserves as many species as possible in the face of climate change'. The CSIRO explains further that 'while ecosystems and species in any one area will change over time, the greater the total area of habitat available, and the more diverse that habitat, the greater the number of ecosystems and species that will be able to survive'.

The CSIRO believes that such approaches which protect the range of ecosystems within each bioregion are a strong basis for building a robust reserve system and will be much more effective under climate change than approaches that mainly target endangered species and communities.

Finally, the CSIRO study reiterates the well-established principle that, because many ecological processes and species' habitat requirements operate at scales far larger than that of individual reserves, the challenge of minimising the effects of climate change on biodiversity will depend not just on the establishment of a comprehensive reserve system, but much more on the coordination of efforts of a wide variety of conservation programs across the whole landscape.

Reflecting this thinking, the ongoing building and management of the DECC reserve system are recognised as priority focus areas in DECC's *Adaptation Strategy for Climate Change Impacts on Biodiversity* (DECC 2007). The strategy's other priority focus areas include planning for cross-tenure connectivity, wildlife management, and the incorporation of science and knowledge into effective natural resource management and environmental planning through raising awareness, communication and capacity building.

Progress in building the DECC public reserve system

NSW began building its system of national parks early with the declaration of Royal National Park in 1879, the second such park in the world.

Following the establishment of the National Parks and Wildlife Service in 1967, the growth of the reserve system accelerated. In the years since there have been a number of high-profile reservations including the coastal parks of the 1970s, the mountain parks of the late 1970s and 80s, the Regional Forest Agreement reserves in the 1990s, and the Brigalow Belt South and Nandewar reserves in 2005. All this activity has been complemented by an ongoing program of land purchase in all parts of NSW, ensuring the protection of a broad range of environments across the state.

However despite the significant achievements in reserve building to date, nearly half of all terrestrial ecosystems in NSW remain poorly reserved and many are not protected in public reserves at all. This presents a range of challenges associated with the future building of the DECC reserve system, namely ensuring reserve system planning is sound and based on clear long-term goals while at the same time being able to develop clear priorities for building the reserve system over the next 10 years and beyond.

Achievements over the last 10 years

DECC's terrestrial public reserve system has grown rapidly over the last 10 years. From 4.5 million hectares in 1997, public reserves managed by DECC now protect nearly 6.7 million ha or 8.3% of NSW (Figure 1). This growth was made possible by the NSW Government's ongoing commitment to developing a comprehensive, adequate and representative reserve system and substantial funding to support that task.

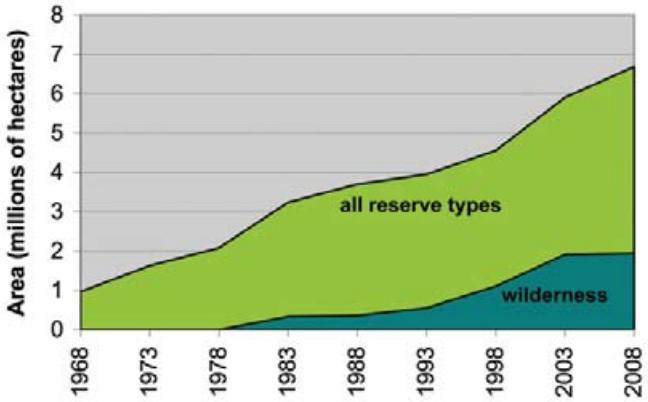


Figure 1: Growth in the DECC public reserve system

Key achievements during this period include:

- reservation of over one million hectares of forests on the coast and coastal ranges
- virtual completion of an unbroken chain of DECC public reserves from the Hunter Valley to the Victorian border
- nearly 40% of the NSW coastline now in reserves managed by DECC
- protection of over 1.3 million hectares in the poorly reserved far west and wheat-sheep belt of western NSW, including more than 350,000 ha of woodlands and forests in the Brigalow Belt South and Nandewar bioregions
- addition of 82,000 hectares to Mungo National Park at the heart of the Willandra Lakes World Heritage Area
- establishment of many new icon national parks and reserves in the west – Culgoa (24,000 hectares), Goobang (42,000 ha), Gundabooka (90,000 ha), Oolambeyan (22,000 ha), Paroo–Darling (220,000 ha) and Yanga (65,000 ha)
- the addition of 30,000 hectares of lands with high conservation value (former Crown lands and State Forest) in the Lower Hunter Valley and a commitment to acquire and reserve a further 12,000 ha of private land incorporating sensitive coastal habitat
- an improvement in the long-term viability of hundreds of existing reserves throughout NSW with the targeted acquisition of important perimeter lands and inholdings
- growth in wilderness areas from about 1 million hectares in 1997 to nearly 2 million ha in 2007.

The map at the front of this plan shows the extent of the DECC public reserve system.

These represent major achievements in building and managing the DECC public reserve system. However, more remains to be done, as outlined in this plan.

DECC/B. Wrigley

A major achievement of the past decade has been the protection of most forest types within DECC reserves: tall eucalypt forest, South East Forest National Park.

Measuring progress

We can gauge what has been achieved to date using three measures:

1. **Protection of ecosystems**: how well does the reserve system incorporate representative samples of the range and diversity of NSW ecosystems, species and habitats?
2. **Adequacy of reserves**: how adequately does each reserve provide long-term protection for the ecosystems, species and habitats occurring in it?
3. **Protecting areas important to people**: how well does the reserve system incorporate representative samples of a range of desirable values, such as scenic beauty, significant landscapes, natural features, places, objects and features of significance to Aboriginal people, historic places and buildings, and places popular for nature-based recreation?

These measures are discussed in detail below.

First measure of progress: protecting ecosystems

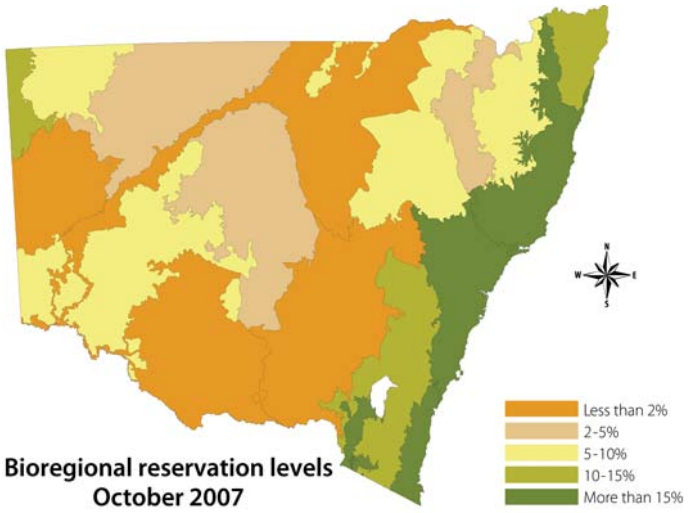
A primary objective of the DECC reserve system is to protect examples of as many of the state's ecosystems as possible, including the natural processes, ecological communities and species they support.

Two coarse-level measures of progress towards meeting this objective are shown in Maps 2 and 3.

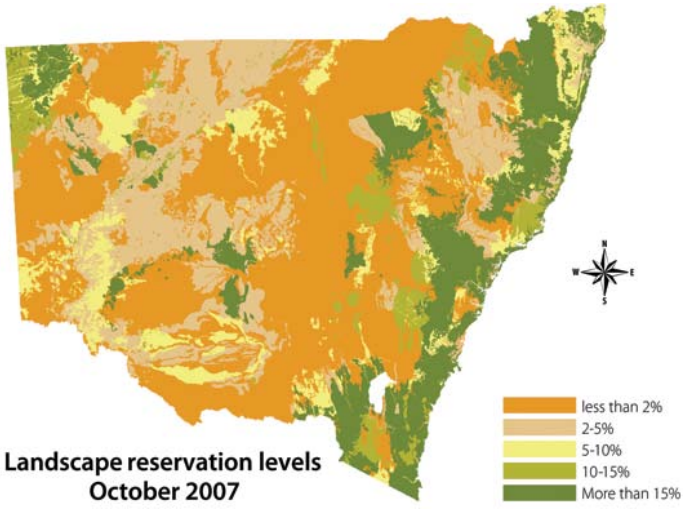
Map 2 shows the proportion of land in DECC public reserves in each of the 18 bioregions of NSW. It demonstrates that the bioregions in eastern NSW contain relatively high levels of reserved lands while the areas of reservation further west are much lower.

This is borne out by DECC's NSW Vegetation Classification and Assessment Database (Benson 2006). Of the 213 plant communities recognised as occurring in the far western and central west plains bioregions of NSW, nearly two-thirds have less then 5% of their pre-European extent protected in reserves and other protected areas, and two-thirds of these are less than 1% protected. Fifteen per cent of all western plant communities are not protected in any form of reserve or protected area (Benson *et al* 2006).

Map 3 looks at reservation levels for each of the 623 NSW Landscape types (Mitchell 2002). It shows that many NSW Landscapes remain poorly reserved even within the well-reserved eastern regions. In general, the best-protected NSW Landscapes are those on the steep ranges of eastern NSW, many coastal landscapes and the Australian Alps. The poorly protected landscapes include most in far western NSW and the northern, central and southern highlands and western slopes and those on the richer soils of the coastal lowlands. Of the 170 coastal wetland plant communities recognised as occurring within the landscapes of the NSW North Coast, for example, well over half remain poorly reserved (Griffith 2003). The majority of the poorly protected landscapes occur on private lands.



Map 2: Proportions of each terrestrial bioregion protected in formal reserves in NSW



Map 3: Proportions of each NSW Landscape protected in formal reserves in NSW

Second measure of progress: adequacy of each reserve

A reserve's shape, size and location, as well as the nature of the surrounding land uses, will determine how adequately it can provide long-term protection for the natural and cultural values the reserve has been established to protect.

Most DECC parks and reserves are only partially built. This is because building a reserve is generally a long-term process that may span many decades as the various lands that might conceptually form the ideal reserve extent and configuration become available for reservation at different times over a long period.

The building of an adequate reserve commonly involves three stages:

Stage 1: Establishing new nodes involves the initial acquisition of available land. These new nodes form the nucleus of the reserve around which additional lands may subsequently be added.

Stage 2: Building up reserves sees significant land additions to protect key natural or cultural features which were either only partly protected in nodes from Stage 1 or which are integral or complementary to features already protected in the nodes. The larger the reserve, the more effective it is in protecting the biodiversity it houses.

Stage 3: Fine-tuning boundaries involves the acquisition of relatively small inholdings or perimeter lands, enabling the reserve to be more efficiently and effectively managed.

The case study on the development of Oxley Wild Rivers National Park demonstrates these three stages and the often long-term nature of the task of building a park or reserve.

Most DECC reserves in central western and far western NSW are at Stage 1, most on the western slopes and tablelands are at Stage 1 or 2 and those along the coast and coastal ranges are generally at Stage 3.

As a result, ongoing effort and long-term commitment will be needed to build up and fine-tune the boundaries of existing DECC reserves so the values in them are adequately protected into the future.

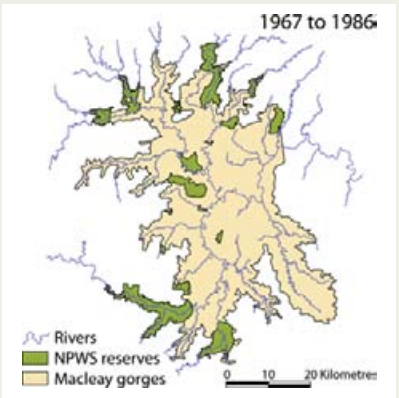
Reserve building case study: Oxley Wild Rivers National Park

Oxley Wild Rivers National Park was established in 1986 when the NSW Government announced it would create a large park to protect the spectacular environments in the gorges of the upper Macleay River. The initial reservation (Stage 1) comprised several small existing public reserves and areas of available Crown land.

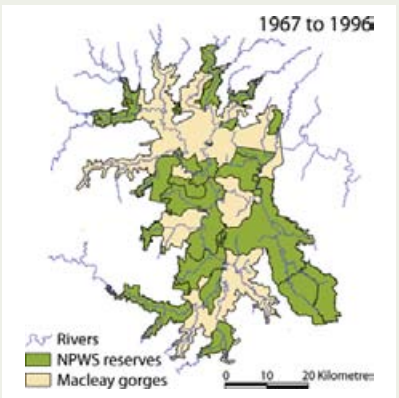
By 1996, following the acquisition of significant areas of land in the gorges, the park was in Stage 2 (building up the park). By 2007, reserve building was still at Stage 2 but approaching Stage 3 (fine-tuning the boundaries) where relatively small additions will be progressively added as lands become available.

DECC/S. Ruming

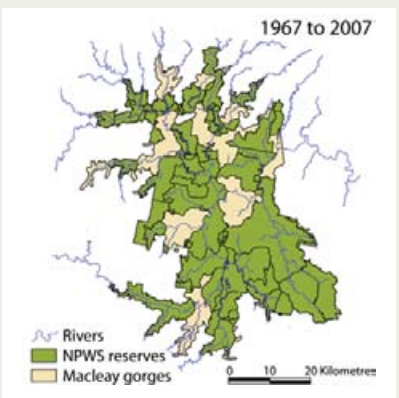
Wollomombi Falls, Oxley Wild Rivers National Park



Stage 1: Establishing the nodes



Stage 2: Building up the reserve



Approaching stage 3: Fine-tuning the boundaries

Third measure of progress: protecting areas of importance to people

In addition to the conservation imperative to protect biodiversity, another primary objective of the public conservation reserve system is its role in protecting areas of special value to people, including places of aesthetic, historic, scientific, social and recreational value.

The growth of the public conservation reserve system over the past four decades has protected a very diverse range of such areas. The purchase of private lands by DECC for inclusion in its reserve system significantly increases opportunities for the public to enjoy many more NSW environments.

The status of the current DECC public reserve system in terms of how well it protects the range of areas of special value to people is not easily measured and DECC is currently working on identifying key cultural heritage themes which may require additional protection through reservation.

Consistent with Priority E8 of the State Plan to increase visitation to parks and reserves, DECC will also work with other government agencies and tourism bodies to improve assessment and planning for recreation in public conservation reserves. Along with the implementation of *Living parks: A sustainable visitation strategy* (DEC 2006), these initiatives will help to better assess the adequacy of the DECC public reserve system for cultural and recreational values, as well as guide selection of possible future reserve additions.

DECC

Aboriginal rock art at Mt Grenfell Historic Site, north-west of Cobar

DECC/P. Mathews

Bushwalking is popular in Boonoo Boonoo National Park, north of Tenterfield.

DECC/A. Mostead

The tall moist hardwood forests of eastern NSW, such as these in South East Forest National Park, are iconic to many people.

3. Policy and planning framework for reserve system building

A fundamental principle which underpins international, national and state conservation policies is the need for a network of natural areas to support the broader sustainable management of land and sea.

A public conservation reserve system is widely accepted as the basis of this network, complemented by conservation arrangements with private and other public landholders that enhance the reserve system's integrity and connectivity to the landscape.

International policy

As a signatory to the international Convention on Biological Diversity (CBD), the Australian Government and its states and territories are committed to establishing and managing a system of protected areas to conserve biodiversity. The CBD also commits signatories to developing guidelines for the selection, establishment and management of protected areas, as well as promoting the protection of ecosystems and natural habitats and the maintenance of viable populations of species.

Parties to the CBD have consistently agreed that efforts to develop and maintain their national protected area systems are central to their strategy of implementing the CBD. Parties acknowledge that the protected area network needs further development and have invited governments to develop national and regional targets and incorporate them into biodiversity strategies and action plans (COP7 2004).

IUCN Protected Areas

The World Conservation Union (IUCN) defines a protected area as:

'An area of land (and/or sea) especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means' (IUCN 1994).

National policy

Intergovernmental Agreement on the Environment

In 1992, the Australian Government and all states and territories agreed to the progressive establishment of a comprehensive, adequate and representative system of protected areas, the design of which would be based on biogoegraphic regions.

National Strategy for the Conservation of Australia's Biological Diversity

Principle 8 of this strategy, to which NSW is a signatory, states:

'Central to the conservation of Australia's biological diversity is the establishment of a comprehensive, adequate and representative system of ecologically viable protected areas integrated with the sympathetic management of all other areas, including agricultural and resource production systems' (Commonwealth of Australia 1996).

National Forest Policy Statement

In 1992 the NSW Government signed the National Forest Policy Statement (Commonwealth of Australia 1992) which sets out a national framework for the eventual establishment of a comprehensive, adequate and representative forest reserve system. This was subsequently backed up by the adoption in 1995 by all states and territories of quantitative targets for building the forest reserve system (Commonwealth of Australia 1997). These included reservation targets of 15% of the pre-1750 extent of forest ecosystems, 60% of old growth forests and 90% of forested wilderness.

Since the start of the comprehensive regional assessment of forest resources in 1995, NSW has made significant progress towards meeting these targets for many forest ecosystems in eastern NSW.

National Reserve System Directions Statement

The concept of the National Reserve System (NRS) was developed by the Australian Government as a framework for meeting its national and international commitments to build a national comprehensive, adequate and representative (CAR) reserve system. The NRS constitutes all protected areas in Australia which meet the IUCN standard of 'protected area' and reflects the collective efforts of Australian states, territories and the Australian Government in establishing secure reserves which meet this standard.

Guiding the development of the NRS are the *Australian guidelines for establishing the National Reserve System* (Commonwealth of Australia 1999) and the *Directions for the National Reserve System* (NRMMC 2005).

The guidelines were endorsed by the Australian and New Zealand Environment and Conservation Council (ANZECC) to provide government agencies, non-government organisations and the community with a consistent scientific approach for developing the terrestrial protected area system.

The Directions Statement indicates that the NRS will be developed through both reserved public lands and secure conservation measures on private land and that, where feasible, public lands should be the first source of lands to build the NRS. The statement specifies the main short-term priority as filling key gaps in the comprehensiveness of the reserve system at the national scale, and also establishes national quantitative targets for *comprehensiveness* and *representativeness* for future reserve system building. These targets, along with new ones for adequacy, are used in this establishment plan.

Principles for designing protected area systems

The principles of comprehensiveness, adequacy and representativeness (CAR) outlined in the National Forest Policy Statement (Commonwealth of Australia 1992) provide a basis for establishing biodiversity targets for protected areas, including the DECC public reserve system:

Comprehensiveness refers to the need to conserve samples of each element of biodiversity in protected areas.

Representativeness is an extension of comprehensiveness which entails ensuring that the full variability of biodiversity is protected with sufficient replicate samples included in protected areas to insure against catastrophic local events such as fire or disease.

Adequacy refers to the long-term capacity or resilience of a protected area to sustain the biodiversity it supports. Adequacy is dependent on protected area size, configuration, placement in the landscape, surrounding land uses and on-ground management regimes.

The reserve design principles below have been developed by JANIS (Commonwealth of Australia 1997) with others drawn from the *Australian guidelines for establishing the National Reserve System* (Commonwealth of Australia 1999). They have been adopted in NSW to guide the ongoing building of an adequate protected area system.

- Protected area boundaries should be set with strong ecological integrity, such as catchments.
- Large protected areas are preferable to small ones, though a range of protected area sizes may be appropriate to adequately represent conservation values.
- Boundary-area ratios should be minimised and linear protected areas avoided where possible, except for riverine systems and corridors that have significant value for nature conservation.
- Protected areas should be developed across the major environmental gradients if feasible, but only if these gradients incorporate key conservation attributes for inclusion in a CAR reserve system.
- Each protected area should contribute to satisfying as many conservation criteria as possible.
- Protected area design should aim to minimise the impacts of threatening processes, particularly from adjoining areas.
- Protected areas should be linked through a variety of mechanisms, wherever practicable, across the landscape.

NSW policy

The commitment to establish a CAR reserve system in NSW is reflected in the *New South Wales Biodiversity Strategy* (NSW Government 1999) and in the State Plan's Environment for Living theme (Priority E4), which states that:

'We will identify and consider conservation priorities region-by-region in a comprehensive Biodiversity Strategy to halt the loss of native plants and animals by:

- building and managing a comprehensive, adequate and representative reserve system which includes both terrestrial and marine parks to protect the state's unique biodiversity from current and future pressures
- promoting voluntary conservation on private land and linking areas of prime habitat with corridors to mitigate the impacts of climate change.'

Ways in which the establishment and management of the DECC public reserve system contributes to other NSW State Plan priority actions include:

- better outcomes for native vegetation, biodiversity, land, rivers and coastal waterways (Priority E4) through their permanent protection
- increased visits to parks and reserves (Priority E8) through the creation of parks and reserves in poorly reserved areas and the reservation of lands which provide a greater range of recreational opportunities
- improved health and education for Aboriginal people (Priority F1) by increasing opportunities for Aboriginal people to access a greater range of lands for cultural and spiritual renewal
- cleaner air and progress in reducing greenhouse gases (Priority E3) by protecting land from vegetation clearing and providing opportunities for land rehabilitation
- increased business investment in rural and regional NSW (Priority P6) by prioritising the west of NSW for new large reserves, thereby providing benefits to regional and local economies through government expenditure on services and capital works, employment for local people, and expenditure by visitors attracted to these reserves.

The NSW Government is also committed to work with private landholders to protect important areas of private land and expand off-reserve voluntary conservation efforts.

Sources of land for the DECC public reserve system

Lands acquired for inclusion in the DECC public reserve system are sourced from:

- Crown and state forest lands transferred from other government agencies following consultation
- donated lands – freehold lands held by other agencies or private landholders and donated to DECC
- certain Commonwealth lands either purchased or transferred to NSW at no cost
- freehold and leasehold Crown land purchased directly by DECC from vendors who have willingly offered their lands for sale.

DECC/R.Dick

DECC's purchase and reservation of private lands, such as these within Gundabooka National Park near Bourke, increases the diversity of areas that people can access and enjoy.

4. Long-term statewide reservation goals

The National Forest Policy Statement (Commonwealth of Australia 1992) and accompanying JANIS criteria (Commonwealth of Australia 1997) laid the foundations for the further development of quantitative goals for establishing the reserve system outside of the forested ecosystems (see Chapter 3).

Reflecting these earlier adopted standards, the National Land and Water Resources Audit (Commonwealth of Australia 2002) recommended 15% as 'an appropriate target for the reserve system in each (biogeographic) region'.

Approximately 11.6% of the Australian landmass and 8.7% of the Earth's surface lie in protected areas recognised by the World Conservation Union (IUCN).

Reserves that meet the IUCN standards for 'protected area' currently account for the following proportions of each Australian state and territory:

- Australian Capital Territory 54%
- Tasmania 38%
- South Australia 26%
- Victoria 16.8%
- Western Australia 13%
- **New South Wales 8.4%** (DECC reserves – 8.3%, flora reserves and private conservation reserves – 0.1%)
- Northern Territory 5.8%
- Queensland 5.4%

Regional variation in reservation goals

The reservation goals adopted by DECC are based on the principle that existing and future opportunities for building a fully comprehensive, adequate and representative public conservation reserve system will vary greatly across NSW.

The opportunities are largely dependent on the extent of historical land clearing and the resulting levels of fragmentation of native vegetation in the landscape.

DECC's approach to setting reservation targets recognises that in regions where little native vegetation is left the prospects of establishing a formal public reserve system are limited.

However in areas where over 70% of native vegetation remains relatively intact, the objective of building a fully comprehensive, adequate and representative public reserve system remains achievable. These areas include the NSW Western Division, the Australian Alps and the coastal ranges.

In areas with less than 70% of native vegetation intact, realistic long-term reservation goals are scaled down according to the proportion of native vegetation remaining in the landscape and lower goals set for the most highly cleared regions. In these areas, the dual strategies of reserving core areas and using a range of complementary non-reservation approaches to protect the links between these areas will be required to slow biodiversity decline.

In areas where less than 30% of native vegetation remains intact, DECC recognises that a fully comprehensive, adequate and representative public reserve system is no longer achievable. These areas are commonly primarily made up of privately owned land. Because of this and the characteristically fragmented nature of native vegetation remnants, DECC will not look to acquire and reserve large areas or numbers of these isolated remnants.

Because virtually all remaining vegetation in these most highly cleared regions is of high conservation value, the role of conservation on private lands, including restoration and revegetation schemes rather than public reservation, becomes critical to arresting the decline in biodiversity.

Quantitative biodiversity reservation targets

This establishment plan incorporates the targets for comprehensiveness and representativeness endorsed by the Commonwealth and all states and territories under the Natural Resource Management Ministerial Council's *Directions for the National Reserve System* (NRMMC 2005):

Comprehensiveness target: Examples of at least 80% of the number of extant regional ecosystems in each bioregion will be represented by 2015.

Representativeness target: Examples of at least 80% of the number of extant regional ecosystems in each sub-bioregion will be represented by 2020.

NSW Landscapes (Mitchell 2002) are adopted as the 'regional ecosystems' to apply to these targets.

In addition to these statewide targets for comprehensiveness and representativeness, this establishment plan also recognises the continued application of JANIS targets (Commonwealth of Australia 1997) for forest ecosystems in regions where Regional Forest Agreements apply.

These broad targets will enable DECC to develop operational reservation strategies at the local level. In seeking to achieve these targets and setting its priorities, DECC will factor in the levels of reservation in neighbouring states where bioregions and subregions cross state borders.

Adequacy: The following factors will be considered in assessing the adequacy of the reserve system in each sub-region:

- JANIS targets (Commonwealth of Australia 1997)
- the extent and distribution of remaining native vegetation in each sub-bioregion
- the area of each sub-bioregion already reserved
- the level of representativeness of current public reserves in each sub-bioregion
- the configuration and placement in the landscape of existing public reserves
- the likely impact of climate change on the resilience of the reserve system
- the nature of surrounding land uses.

Progress towards quantitative targets

Of the 18 bioregions in NSW, 11 still have less than 50% of their regional ecosystems sampled in protected areas ('comprehensiveness' measure). At a finer scale, of the 129 bioregional sub-regions in NSW, 79 still have less than 50% of their regional ecosystems sampled ('representativeness' measure).

The 'vital statistics' tables in Chapter 5 summarise current progress towards the comprehensiveness and representativeness targets for each bioregion.

These quantitative targets provide an objective practical measure at a coarse scale of the status of the current protected area system and a means to monitor future progress in building the system.

Goals for achieving conservation of other values

Objective and quantitative targets for including places of cultural or social value or geological heritage in the reserve system are not as easily set as those for biodiversity. Quantitative measures, for example, cannot be applied to the attachments which people may have to places of special value.

Accordingly, this plan sets various principles to be applied in planning for the protection of such places, as well as priority themes that will be followed over the next decade. These are detailed in Chapter 5.

DECC/M. Cufer

As well as Aboriginal cultural heritage, DECC's reserve system protects many examples of historic heritage, such as this 26-stand woolshed in Kinchega National Park, built in 1875.

5. A 10-year plan

This chapter presents the thematic priorities that will be followed for enhancing the DECC public reserve system in NSW over the next 10 years. These priorities are set against the longer term practicality that building a comprehensive, adequate and representative reserve system is a slow process and may take another 50 years to complete in NSW.

The chapter then outlines specific future directions for building this reserve system over the next decade in the five reserve system planning regions that cover the state. These regions are groupings of similar bioregions.

Priorities for DECC public reserves over the next 10 years

The thematic reservation priorities outlined below do not single out particular parcels of land. Specific land will only be identified after the completion of detailed regional and site-based biodiversity and cultural heritage assessments.

The lands selected for reservation over the next decade will be in areas where there are currently no existing reserves (and will form the nuclei of new reserves), as well as in areas adjoining existing reserves.

The priority for establishing new nodal areas will be in the most poorly reserved and threatened regions, including those ecosystems and habitats listed below, as well as climate change refuges and places of special significance to Aboriginal people.

The availability of land for addition to the DECC reserve system will rely on the willingness of landowners to sell or transfer their land and considerations within government of any alternative land-use requirements or needs. Where feasible, public lands will be the first source of lands to build the DECC public reserve system.

Poorly reserved ecosystems and habitats

A high order priority over the next 10 years will be to increase the diversity of the reserve system by making significant progress towards reaching the comprehensiveness and representativeness targets adopted in *Directions for the National Reserve System* (NRMMC 2005). CSIRO (2008) considers this to be a fundamentally important strategy for minimising the effects of climate change on biodiversity.

During this period areas experiencing expanding agricultural and urban development and the regulation of natural water flow are likely to face the greatest threat.

In this context, the following poorly reserved environments will receive high priority for better protection within reserves over the next decade:

- belah, myall and wilga/rosewood/whitewood woodlands in the central western plains bioregions and, to a lesser extent, the far west
- brigalow tall shrublands, chenopod shrublands and carbeen open forests of the mid-western plains and western slopes throughout the central western plains bioregions
- box eucalypt woodlands, native grasslands, wetlands and riparian communities of the mid-western plains, western slopes and tablelands and western parts of the Sydney Basin bioregion
- riverine forest communities of the lower Murray, Murrumbidgee, Lachlan and Darling rivers
- forests, woodlands, shrublands and wetlands in all the state's coastal valleys, floodplains and estuaries
- significant karst (limestone cave) formations
- important existing and future climate change refuges.

BGT/J. Plaza

Extensively cleared and now endangered, yellow box–Blakely's red gum tall woodland is poorly represented in the DECC reserve system.

Wetlands, floodplains, lakes and rivers

Australia's freshwater rivers, wetlands, lakes and estuaries provide essential ecosystem services and habitat for many species. The effects of climate change will place increasing stress on these systems. Along with coastal environments, they are culturally important to both indigenous and non-indigenous people. Priorities for protection in the next 10 years will include:

- icon wetlands in western NSW along the upper Darling and its tributaries, the Murray and Murrumbidgee rivers, and on the tablelands, coastal floodplains and estuaries
- additions to existing wetland reserves in all parts of NSW to consolidate boundaries and improve the protection of their wetland environments
- consolidation of existing DECC public reserve boundaries around coastal lakes identified as having high conservation value by the Healthy Rivers Commission (HRC 2002)
- the declaration of high conservation value rivers within certain existing DECC reserves as 'Wild Rivers'.

Critical landscape corridors

The long-term viability of many public conservation reserves and of the whole protected area system may rely on the maintenance or re-establishment of vegetated corridors between reserves or other core areas of native vegetation.

These corridors allow animals to move across the landscape for daily or seasonal migration and for plant seeds to disperse in response to gradual environmental changes, such as climate change. Vegetated corridors, however, also provide the same facility for the movement of pest animals and the spread of weeds and thus need to be managed carefully. Corridors also act as pathways enabling access to, and connecting places of, cultural value.

Over the next decade the DECC reservation program will focus on, but not be restricted to:

- identifying more accurately those corridors most important for adaptation to climate change
- progressing the establishment of a north-south corridor from the Border Ranges to the Australian Alps
- linking existing coastal reserves
- protecting altitudinal corridors between the coast and the coastal ranges
- protecting many key corridors on the NSW tablelands and western slopes.

Lands within important water catchments

The strategic reservation of lands in drinking water catchments can be effective in protecting both water quality and biodiversity. Protecting water catchments ensures that important downstream aquatic ecosystems, such as high conservation value coastal lakes, wetlands, streams, estuaries and near-shore marine environments, are saved from pollution and siltation.

Over the next decade the reservation program will seek to protect lands in:

- the water storage catchments of Sydney and the lower Hunter
- the catchments and shorelines of coastal lakes and estuaries identified as having high conservation value by the Healthy Rivers Commission (HRC 2002)
- important parts of the catchments of marine parks.

J. Little

Culturally important places

Protecting places of importance to people has always been one of the roles of the DECC public reserve system. DECC will continue to pursue partnerships and special management arrangements with Aboriginal people and also manage significant historical assets for the people of NSW.

Reservation priorities for areas of cultural significance to Aboriginal people over the next decade will include those:

- which provide ongoing cultural uses, ensure the continuing exercise of cultural responsibilities or enable the re-establishment of cultural activities
- which provide a link between reserved lands and the wider landscape that is part of a broader story line, such as critical parts of Dreaming paths
- which, of themselves, are significant to a particular community for the objects they contain or for landscape features of significance, such as rock holes, rock art, stone quarries, fish traps, etc.

DECC/M. Cufer

NPWS ranger Rod Mason interprets Aboriginal rock engravings in Royal National Park near Sydney.

More generally, cultural heritage priorities will also include:

- outstanding examples of their kind which are poorly protected or under threat of degradation or loss outside the reserve system
- areas of cultural significance which are not otherwise accessible to the community
- iconic lands on the coast with particular aesthetic and recreational values
- lands within identified wilderness areas
- lands which will protect wild rivers, wetlands and catchments
- certain scenic landscapes or features in areas such as the Illawarra escarpment and the Blue Mountains.
- other priorities which may emerge in the future in response to changing community views.

Places of geological significance

The importance of protecting places of geological significance, including karst areas, is increasingly recognised by the NSW community. The selection of areas to be included within the DECC reserve system will be based on assessment of their:

- representativeness
- rarity and uniqueness
- importance for research or understanding landform history or geological processes
- cultural and social values, including educational, aesthetic, scenic, historical, sense of place, spiritual and recreational.

Areas important for effectively and efficiently managing existing DECC public reserves

Most DECC public reserves are progressively established over many years, even decades, as opportunities arise to acquire the individual parcels of land which fit together to make up the final reserve.

Because of the long-term nature of reserve-building, many of these reserves are still in their early stages of development, making them either too small to be viable or too poorly configured to be able to be efficiently or effectively managed. For some Stage 1 reserves, practical or legal access to the reserve from surrounding lands may even be lacking for a time. Climate change will influence all existing threats to current reserves, accelerating the need to improve their boundaries and increase their effective areas.

Accordingly, DECC will maintain a very active program of fine-tuning its reserve boundaries by adding relatively small areas to existing reserves.

DECC/M. van Ewijk

Providing better public vehicular access to our parks is one objective of land acquisition.

Priorities over the next decade lie mainly in the eastern half of NSW along the coast, in the ranges, and on the tablelands and western slopes and will include:

- areas which will improve the effectiveness and efficiency of management
- areas that will buffer reserves from the local effects of climate change
- areas required to create or improve public access
- inholdings (areas of private or Crown land embedded within a reserve)
- appropriate Crown lands of high conservation value which adjoin DECC public reserves
- lands required to 'consolidate' or link DECC reserves along the coastal strip
- high priority intertidal areas adjoining coastal and estuarine DECC reserves
- areas that will buffer DECC reserves from adjoining land uses which may threaten them.

Priorities for protected areas on private land

As part of the process of building a network of protected areas, DECC will continue to establish voluntary protection agreements in partnership with private and other public landholders to complement its public reserve system. These include Conservation Agreements, Wildlife Refuges and Aboriginal Places under the *National Parks and Wildlife Act 1974* and Wilderness Protection Agreements under the *Wilderness Act 1987*.

The priorities for conservation of private land include:

- poorly reserved ecosystems in all regions, but particularly within poorly reserved or vegetated sub-bioregions in the Western Division, western slopes and plains, tablelands and most coastal valleys and lowlands
- protecting perimeters of existing DECC reserves and important corridors and links between them
- places where Aboriginal people and other landowners seek to protect cultural values
- areas where establishing a Conservation Agreement, Wildlife Refuge or Aboriginal Place will help to promote broader conservation outcomes in the wider community.

DECC/M. Lauder

Fire management in and around parks is often improved by the strategic addition of lands.

S. Ruming

Conservation on private lands can help buffer neighbouring parks and protect poorly-reserved remnant habitats and vegetation corridors.

Specific reservation priorities by planning region

The current stage of reserve system building reached in each bioregion will guide the strategic directions DECC will adopt in the state's five planning regions over the next 10 years. Map 4 shows the broad primary and secondary directions for DECC reserve system building in each region.

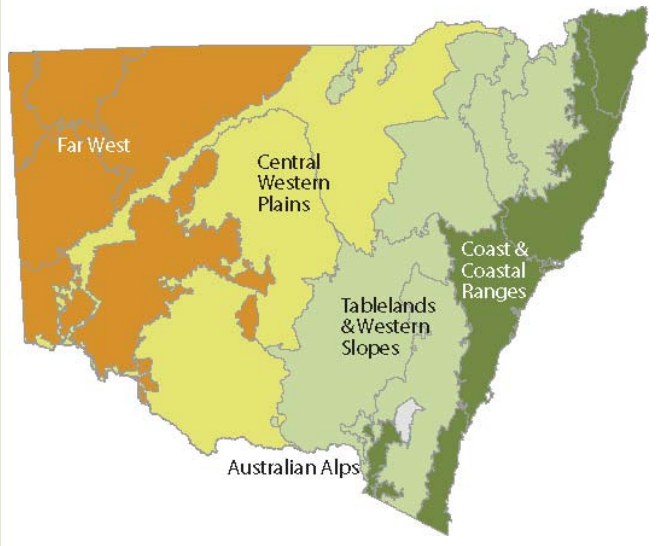
The statements of intent and associated priority actions detailed in this section have been developed by collating and combining information from statewide, regional and site-based studies over the past decade by DECC, other government agencies, local government, private conservation organisations and scientific institutions.

They are set at a thematic and broad geographic level and will guide subsequent finer-scale identification of particular parcels of land for inclusion in the DECC public reserve system.

In doing this, DECC will use the best available information to guide these selections.

Additions of land to the DECC reserve system will rely on:

- the land being available for sale or transfer
- careful consideration by the Government of the relative merits of reservation versus existing or alternative land uses, such as mineral or gas extraction, agriculture or sustainable forestry, or other effective alternative conservation mechanisms
- assessment of the availability of funding for the ongoing management of any lands reserved.



Primary focus – establish new nodes
Secondary focus – build up existing reserves

Primary focus – build up existing reserves
Secondary focus – establish new nodes

Primary focus – fine-tune existing reserves
Secondary focus – build up existing reserves and establish new nodes

Primary focus – fine-tune existing reserves

Map 4: Directions for DECC reserve system building in each planning region over the next decade

In line with the principle outlined in the NRS Directions Statement (NRMMC 2005), it is NSW Government policy to source lands required for building the DECC reserve system in the first instance from existing Crown or other publicly owned lands. This will be complemented by continuing a program of purchasing and reserving freehold and leasehold land in all parts of NSW.

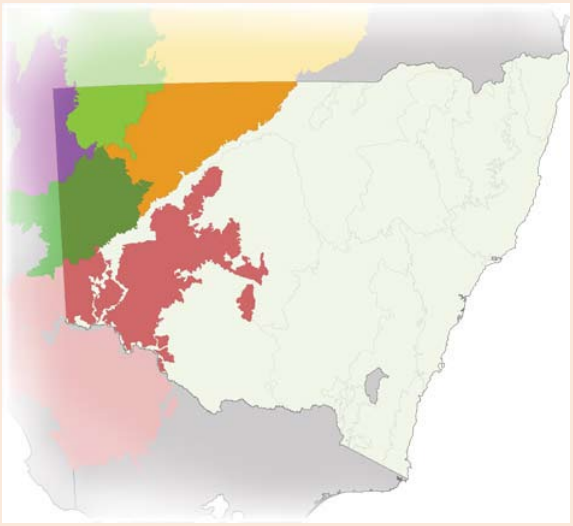
DECC/J. Winter

Wetlands are a key priority for protection over the next ten years: flooded coolabah woodland along the Paroo River in Nocoleche Nature Reserve.

Far west bioregions

DECC/R. Dick

Peery Lake, Paroo–Darling National Park in the Mulga Lands bioregion



- Simpson–Strzelecki Dunefields
- Channel Country
- Mulga Lands
- Broken Hill Complex
- Murray–Darling Depression

We are still establishing primary nodes for a CAR system in the far west.

Located in the far western pastoral zone of NSW, these bioregions are characterised by arid to semi-arid climates, high levels of remnant native vegetation cover and few existing public conservation reserves. Most land in this bioregional group is Crown leasehold held as perpetual pastoral leases known as 'Western Lands Leases'.

Except for the southern part of the Murray–Darling Depression, where higher average rainfall attracts a growing agricultural sector and interest in mineral sand mining is increasing, the threats to these regions from broadscale clearing over the next decade are relatively low compared with bioregions to the east.

Climate projections indicate a drying of this region over time which may lead in the short term to degradation resulting from increasingly unsustainable grazing and browsing by cattle, sheep, rabbits and goats, and a longer term decline in pastoralism (CSIRO 2008).

Twenty-two DECC public reserves lie wholly or partly within the far west bioregions, protecting about 5% of the land area. All bioregions are at Stage 1 of reserve system building: establishing primary nodes as foundations for a future reserve system.

Vital statistics: Far west bioregions – June 2008

Measure for NSW section of bioregion	Simpson–Strzelecki Dunefields	Channel Country	Mulga Lands	Broken Hill Complex	Murray–Darling Depression
Area (ha)	1,069,056	2,337,430	6,583,051	3,791,288	7,922,590
Remaining native vegetation cover (% of bioregion)	100%	100%	100%	100%	93%
Number of DECC-managed reserves in bioregion	1	2	5	4	12
Area in DECC-managed reserves (ha and % of bioregion)	118,921 11.1%	218,662 9.4%	233,778 3.5%	75,441 2%	441,901 5.6%
Progress towards comprehensiveness*	44%	46%	63%	33%	51%
Progress towards representativeness*	44%	31%	41%	25%	44%

* Measured against National Reserve System targets described in Chapter 4

Statement of intent for reserve system building over the next decade: Far west bioregions

The establishment of new primary nodes and major additions to existing DECC public reserves are the priorities in the far west bioregions over the next decade. However, because of the relatively lower threat levels in these bioregions, the priorities have less urgency than those for the neighbouring central western plains bioregions.

Priorities will include:

- establishing new primary nodes in all bioregions, including in the wetlands and floodplains of Cuttaburra Creek and Bulloo River and riverine forest and woodland communities of the lower Murray and Darling rivers and places of special significance to Aboriginal people
- building up existing reserves where opportunities arise.

DECC/R. Dick

Brigalow forest, such as this in the Mulga Lands bioregion, was once widespread across northern inland NSW and remains poorly represented in the DECC reserve system.

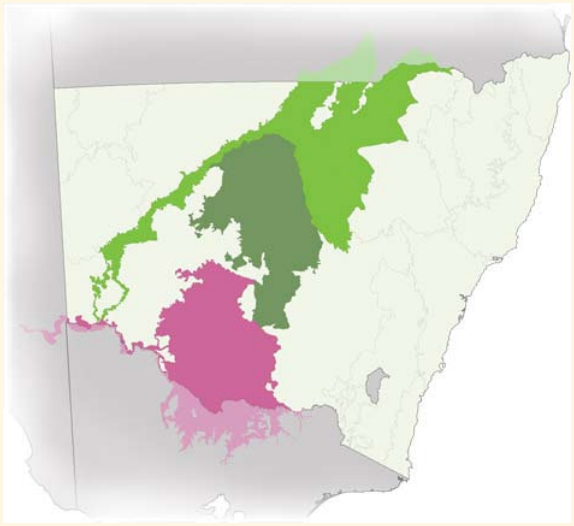
DECC/G. Robertson

Chenopod shrubland, Kinchega National Park.

Central western plains bioregions

BGT/J. Plaza

This weeping myall woodland in the Darling Riverine Plains bioregion is an endangered ecological community that is poorly represented in the DECC reserve system.



Darling Riverine Plains

Cobar Peneplain

Riverina

We are still establishing primary nodes for a CAR system in the central western plains, but because of past clearing in the eastern parts of this region, opportunities for reservation are reduced and ongoing threats are high.

The Riverina and Darling Riverine Plains bioregions largely consist of vast floodplains separated by the Cobar Peneplain bioregion, an undulating plain interspersed with low rocky ranges.

The climate is semi-arid and all bioregions are characterised by active land-use change involving shifts from grazing to agriculture often accompanied by water extraction for irrigation. The levels of reservation are low.

The western parts are mainly pastoral leases within the NSW Western Division. Lower rainfall and past controls on clearing on these Western Lands Leases have helped these areas retain much of their native vegetation.

The eastern parts of these regions cover the western area of the NSW wheat-sheep belt, land which has been largely cleared of native vegetation.

Climate projections for much of the western half of this region are similar to those for the far western bioregions. In the south-east (Riverina bioregion), the drying effect may intensify land use in the low-lying 'wetter' areas, while in the north (Darling Riverine Plains bioregion), climate change may lead to a decline in intensive cropping (CSIRO 2008).

Forty-two DECC public reserves lie wholly or partly within the central western plains bioregions, protecting only 3.2% of the land area. All bioregions are at Stage 1 of reserve system building: establishing primary nodes as foundations for a future reserve system.

Vital statistics: Central western plains bioregions – June 2008

Measure for NSW section of bioregion	Darling Riverine Plains	Cobar Peneplain	Riverina
Area (ha)	9,397,488	7,369,824	7,018,240
Remaining native vegetation cover (% of bioregion)	65%	69%	72%
Number of DECC-managed reserves in bioregion	15	13	14
Area in DECC-managed reserves (ha and % of bioregion)	158,110 1.7%	177,238 2.4%	123,154 1.8%
Progress towards comprehensiveness*	36%	40%	55%
Progress towards representativeness*	30%	37%	27%

* Measured against National Reserve System targets described in Chapter 4

Statement of intent for reserve system building over the next decade: Central western plains bioregions

These bioregions will be a higher priority for land acquisition over the next decade than the far west bioregions because of the greater threat posed by changing land uses in these regions.

Priority actions will focus on establishing new nodal areas and building up existing DECC reserves.

Priorities for new nodes include:

- woodlands and grasslands of the Riverina, the upper Darling Riverine Plains and the eastern parts of the Cobar Peneplain bioregions
- riverine forest communities and adjacent box eucalypt woodlands of the Murray and Murrumbidgee rivers
- wetlands and riparian communities of the Darling Riverine Plains and Riverina bioregions
- belah, myall and wilga/rosewood/whitewood woodlands
- brigalow tall shrublands, chenopod shrublands and carbeen open forest
- box eucalypt woodlands and native grasslands, particularly on the Gwydir and Culgoa floodplains
- new icon wetlands, such as end-of-system wetlands, lignum shrublands, marshes and ephemeral lakes
- iconic places of special significance to Aboriginal people.

DECC will also focus on adding to many existing reserves, particularly riparian reserves, to consolidate their boundaries and improve the protection of these environments. These areas include Narran Lakes, Macquarie Marshes and Ledknapper nature reserves and Kalyarr, Yanga, Culgoa, Paroo–Darling, Gundabooka and Oolambeyan national parks.

BGT/J. Plaza

Native grasslands are among the state's most threatened and poorly protected ecosystems: Mitchell grass community near Louth in the Darling Riverine Plains bioregion.

Tablelands and western slopes bioregions

BGT/J. Plaza

Norton's box–hopbush low woodland in Benambra National Park, NSW South-western Slopes bioregion

We have established many core areas and are building up the reserve system on the tablelands and slopes.

The eastern parts of this bioregion group constitute the mainly undulating highlands of the New England Tableland bioregion, the Liverpool Range and South Eastern Highlands bioregion. These form the catchment divide between the eastern- and western-flowing river systems of NSW. The western fall of these highlands, comprising the Nandewar, Brigalow Belt South and NSW South-western Slopes bioregions, is a mix of flat, undulating and rugged landscapes.

These bioregions occupy the eastern part of the NSW sheep-wheat belt where land-use activities have led to extensive clearing of between 60% and 85% of the native vegetation. Only a few large native vegetation patches are left in these bioregions: the Pilliga and Goonoo forests and Kaputar Range. The remaining native vegetation is distributed in thousands of small- to medium-sized isolated patches separated by extensive areas of cleared agricultural and grazing land.

Between the remnant patches of native vegetation, an extensive network of narrow corridors of native vegetation has survived, mainly inside public lands, such as travelling stock reserves, road reserves and land along stream banks. These support important ecosystems and habitats, and provide vital habitat links between native vegetation remnants across the bioregions.

Because of this native habitat loss and fragmentation, the threats to biodiversity in these bioregions are very high. Climate projections for this region indicate warmer drier winters and, on the slopes in particular, wetter summers. This may trigger significant land-use change involving increased cropping in some areas (including some wetlands) and abandonment of cropping in others and, on the tablelands and highlands, pasture improvement of remnant native grasslands (CSIRO 2008).

A total of 275 DECC public reserves lies wholly or partly within the tablelands and western slopes bioregions, protecting about 5.2% of the land area. The South Eastern Highlands and Brigalow Belt South bioregions are mainly at Stage 2 of reserve system building (building up existing primary nodal areas) while the other three bioregions are mid-way between Stage 1 (establishing primary nodes as foundations for a future reserve system) and Stage 2.

Vital statistics: Tablelands and western slopes bioregions – June 2008

Measure for NSW section of bioregion	Brigalow Belt South	Nandewar	New England Tableland	NSW South-western Slopes	South Eastern Highlands
Area (ha)	5,629,736	2,070,751	2,856,696	8,192,519	4,715,273
Remaining native vegetation cover (% of bioregion)	42%	34%	42%	16%	42%
Number of DECC-managed reserves in bioregion	57	20	59	46	93
Area in DECC-managed reserves (ha and % of bioregion)	465,747 8.3%	76,042 3.7%	260,254 9.1%	157,197 1.9%	696,716 14.8%
Progress towards comprehensiveness*	55%	53%	80%	33%	94%
Progress towards representativeness*	36%	55%	53%	24%	63%

* Measured against National Reserve System targets described in Chapter 4

Statement of intent for reserve system building over the next decade: Tablelands and western slopes bioregions

Because virtually all remaining vegetation in the most highly cleared areas is of high conservation value, the role of conservation on private lands, including restoration and revegetation schemes, will be particularly critical in arresting the decline of biodiversity in these regions.

Road reserves and travelling stock reserves will play an important role in conserving a wide range of ecosystems and cultural heritage in these regions, and effective partnerships to protect these important public assets will need to be developed.

The primary focus for building the DECC reserve system in this region will be on the strategic build-up of many existing small reserves to bolster their long-term viability and improve their management. The strategic establishment of several new small- to medium-sized reserves will be a secondary focus.

Priorities for reserve system build-ups will focus on:

- reserves with very poor boundary configuration
- lands which establish links between small reserves or within the key corridors listed below
- lands which protect threatened or poorly reserved ecological communities, such as those on the lower slopes adjacent to Mount Kaputar, Towarri and Coolah Tops national parks
- lands within identified wilderness areas
- iconic places of special significance to Aboriginal people.

Priorities for new nodes include:

- riverine forest communities and adjacent box eucalypt woodlands of the Lachlan and Murrumbidgee rivers
- box eucalypt woodlands and native grasslands, particularly on the Liverpool Plains, Gwydir floodplains and Monaro Tableland
- wetlands and riparian communities throughout the tablelands and western slopes bioregions
- poorly reserved ecosystems in the Nandewar bioregion and western parts of the New England Tableland bioregion
- iconic places of special significance to Aboriginal people.

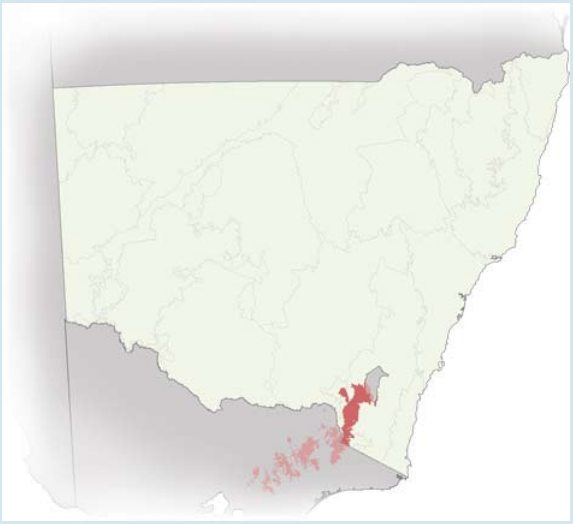
Priorities for strengthening corridors and links include:

- the Liverpool Range between Towarri and Coolah Tops national parks
- the lowlands between Coolah Tops and Warrumbungle national parks
- between the Castlereagh and Talbragar rivers (Goonoo–Pilliga to Mount Kaputar and Mount Kaputar to Terry Hie Hie)
- the corridor between Pilliga Nature Reserve and Warrumbungle National Park
- the east-west upper Murray River corridor between Kosciuszko National Park and Woomargama National Park near Albury
- the corridor along the Abercrombie River valley linking Blue Mountains National Park, Abercrombie River National Park, Razorback Nature Reserve and Copperhannia Nature Reserve.

Australian Alps bioregion

DECC/S. Cohen

Snow gums, Bimberi Nature Reserve in the Australian Alps bioregion



Australian Alps

The reserve system in the Australian Alps is nearly complete.

The Australian Alps bioregion has a unique climate and biodiversity. It straddles the NSW-Victorian border and supports alpine forests, woodlands, shrublands, grasslands and wetlands. The region is largely uncleared with over 81% protected in DECC public reserves in NSW, mostly within Kosciuszko National Park.

Despite its high level of reservation, many ecosystems and species in this region are under considerable threat from climate change, where projections indicate warmer and drier conditions (CSIRO 2008)

The Australian Alps bioregion is at Stage 3 of building its reserve system: fine-tuning existing reserve boundaries.

Vital statistics: Australian Alps bioregion – June 2008

Measure for NSW section of bioregion	Australian Alps
Area (ha)	460,146
Remaining native vegetation cover (% of bioregion)	96%
Number of DECC-managed reserves in bioregion	5
Area in DECC-managed reserves (ha and % of bioregion)	376,367 81.8%
Progress towards comprehensiveness*	100%
Progress towards representativeness*	100%

* Measured against National Reserve System targets described in Chapter 4

Statement of intent for reserve system building over the next decade: Australian Alps bioregion

Because of the very high level of reservation in this region, the focus for building the reserve system over the next decade will be on possibly acquiring a few small but strategic additions to existing DECC reserves to improve reserve management.

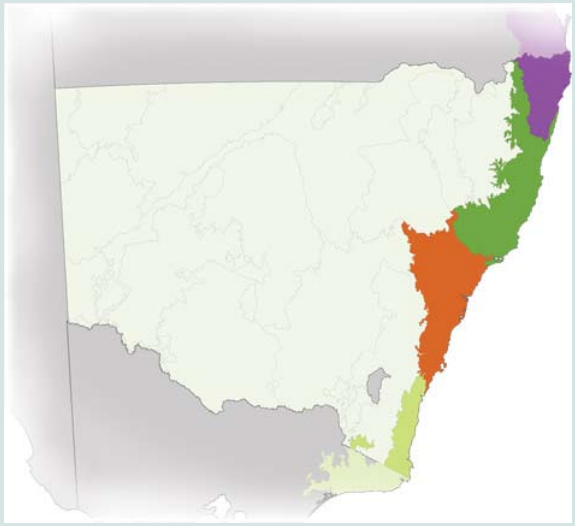
Priority areas for acquisition include:

- parts of the Gungarland lands on the eastern border of Kosciuszko National Park
- small additions to Scabby Range Nature Reserve
- areas linking parts of Yaouk Nature Reserve.

Coast and coastal ranges bioregions

Smoky Cape in Hat Head National Park, NSW North Coast bioregion

DECC



The DECC public reserve system is well developed along the coast and in the coastal ranges. DECC will acquire areas to improve management of individual reserves and protect under-represented ecosystems.

Located on the eastern fall of the Great Dividing Range, these four bioregions are characterised by relatively high annual rainfall compared with inland NSW, as well as rugged ranges, coastal valleys, floodplains, dune systems and estuaries, forests, and coastal heathlands and wetlands. They retain large proportions of their original native vegetation, although the coastal valleys, floodplains and lowlands and other lands on richer soils have been extensively cleared with their ecosystems poorly protected and highly threatened.

Major threats include land clearing for the expansion of agricultural, rural residential, urban, industrial and transport activities and infrastructure. Climate projections for this region indicate increased summer and autumn rainfall (CSIRO 2008) and, along the immediate coastline, rising sea levels threatening some ecosystems.

Over 450 DECC public reserves lie wholly or partly within the coast and coastal ranges bioregions, protecting nearly 30% of the land area. Most of these lie along the more rugged ranges and coastlines. All bioregions are mainly at Stage 3 of reserve system building: fine-tuning existing reserve boundaries.

Vital statistics: Coast and coastal ranges bioregions – June 2008

Measure for NSW section of bioregion	South East Queensland	NSW North Coast	Sydney Basin	South East Corner
Area (ha)	1,658,869	3,990,185	3,800,249	1,160,786
Remaining native vegetation cover (% of bioregion)	53%	66%	66%	82%
Number of DECC-managed reserves in bioregion	103	197	143	29
Area in DECC-managed reserves (ha and % of bioregion)	225,047 13.6%	974,171 24.4%	1,446,049 38.1%	495,967 42.7%
Progress towards comprehensiveness*	100%	99%	94%	100%
Progress towards representativeness*	71%	85%	77%	98%

* Measured against National Reserve System targets described in Chapter 4

Statement of intent for reserve system building over the next decade: Coast and coastal ranges bioregions

Reserve system building in these bioregions will focus primarily on fine-tuning existing DECC reserve boundaries. A secondary focus will be on establishing new reserve nodes in poorly protected and highly threatened ecosystems on the lower slopes of the coastal ranges, the coastal valleys, floodplains and estuaries, and remnant ecosystems on rich volcanic soils.

In some instances, the best lands for adding to the reserve system on the coastal lowlands have been substantially modified as a result of 150 years of vegetation clearing or thinning and the drainage of wetlands for grazing and agriculture. Such areas will require varying degrees of active habitat restoration.

Priorities for fine-tuning and building up existing reserves in these bioregions include:

- reserves with very poor boundary configuration or containing inholdings
- lands adjoining reserves which support poorly reserved ecological communities and species
- lands within identified wilderness areas
- a consolidation of DECC's coastal public reserves
- appropriate high conservation value Crown lands adjacent to reserves
- lands previously identified for priority reservation in the Upper and Lower North East NSW Regional Forest Agreements and the Lower Hunter Valley Regional Strategy
- high priority intertidal, estuarine and lakebed areas which adjoin existing coastal and estuarine reserves
- areas that help buffer DECC public reserves from adjoining land uses that may be threatening reserve viability
- areas needed to create, improve or manage public access to existing DECC reserves
- lands which establish links between small reserves or within the key corridors listed below
- iconic places of special significance to Aboriginal people.

Priorities for corridors and links will include:

- consolidating the north-south corridor along the eastern ranges between Sydney and Victoria
- establishing a north-south corridor between the Border Ranges and the Hunter Valley
- consolidating the existing east-west coast-to-ranges corridor near Jervis Bay
- linking unconnected parts of all DECC coastal reserves
- linking key corridors between the Gondwana Rainforests of Australia World Heritage Area on the north coast and northern ranges.

Priorities for water catchments include:

- protecting certain lands within the water storage catchments of Sydney and the lower Hunter
- protecting critical parts of the catchments and shorelines of coastal lakes and estuaries identified as having high conservation value by the NSW Healthy Rivers Commission (HRC 2002)
- important parts of the catchments of marine parks.

Priorities for new core areas in this region include iconic places of special significance to Aboriginal people and poorly protected forests, woodlands, shrublands and wetlands of the:

- lower slopes of the coastal ranges
- coastal valleys, floodplains and estuaries and remnant ecosystems of the rich volcanic soils of the lower Richmond, Clarence, Hastings, Macleay and Hunter river valleys
- western parts of the Sydney Basin bioregion
- Cumberland Plain in Western Sydney
- Illawarra Coast and the lower Shoalhaven and Bega river valleys.

Glossary

Adequacy	A reserve or reserve system's capacity to protect the biodiversity it contains. Adequacy depends on factors such as reserve size, shape, content, location within the surrounding landscape and adjoining land uses. Often referred to as reserve 'viability'.
Biodiversity	The variety of all life forms: the different plants, animals and micro-organisms, the genes they contain and the ecosystems they form.
Bioregion	Also known as 'biogeographic region'. Large regions of relatively similar geology, geography and geomorphology which support distinctive suites of native plants and animals. NSW supports 18 terrestrial bioregions, as well as five marine bioregions in its coastal waters.
CAR reserve system	A system of reserves that is comprehensive, adequate and representative (CAR), three measures of how well the system samples and offers long-term protection for the range of biodiversity in a region.
Comprehensiveness	A measure of how well a reserve system conserves samples of each element of biodiversity in that system.
Conservation	The protection, maintenance, management, sustainable use, restoration and enhancement of the natural environment.
Covenant	A voluntary legal undertaking by a landowner registered on the land title to protect some nominated value or condition of the land.
Crown land	Crown reserves, Crown roads and travelling stock reserves established under the *Crown Lands Act 1969*.
DECC public reserves	For the purposes of this document, national parks, nature reserves, state conservation areas, Aboriginal areas, historic sites, regional parks and karst conservation reserves established under the *National Parks and Wildlife Act 1974*, aquatic reserves and certain Crown reserves vested in the NSW Minister for the Environment and managed by the NSW Department of Environment and Climate Change, which incorporates the NSW National Parks and Wildlife Service.
Ecosystems	Communities of organisms and their physical environment interacting as a unit.
Inholdings	Unreserved areas of land lying within reserves. They may be Crown or private lands. Land uses within inholdings are often incompatible with the long-term management objectives of the surrounding reserves.
NSW Landscapes	Biogeographic units at a finer scale than sub-bioregions. Also referred to as 'Mitchell Landscapes' (Mitchell 2002). The state has 623 mapped NSW Landscapes.
Protected area	Any area of land or water body that is dedicated, either formally or informally, to the protection and maintenance of biological diversity or particular cultural heritage. For any protected area to meet the standard of an IUCN Protected Area, it must also be managed through legal or other effective means (IUCN 1994).
Public conservation reserves	All reserves on public land established under state legislation primarily for the purposes of natural and cultural conservation. Includes all DECC reserves, flora reserves (Forestry Act) and many Crown reserves (Crown Lands Act).
Public land	Commonwealth lands, public conservation reserves, state forests, Crown land or freehold land held and managed by a state or federal authority.

Representativeness	A measure of how well a reserve system conserves samples of the natural variability of each element of biodiversity. It is an extension of the concept of comprehensiveness, but at a finer scale.
Sub-bioregion	Smaller mapped biogeographic units lying within larger bioregions. NSW has 129 sub-bioregions.
Viability	The capacity of a reserve or reserve system to effect the long-term survival of the native species and ecosystems contained within. Also referred to as reserve 'adequacy'.

Acronyms

BGT	Botanic Gardens Trust
CAR	Comprehensive, adequate and representative
CBD	(International) Convention on Biological Diversity
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DECC	Department of Environment and Climate Change NSW
HRC	NSW Healthy Rivers Commission
IBRA	Interim Biogeographic Regionalisation for Australia
IMCRA	Interim Marine and Coastal Regionalisation of Australia
IUCN	International Union for the Conservation of Nature (now World Conservation Union)
JANIS	Joint Australian and New Zealand Environment and Conservation Council/Ministerial Council on Forestry, Fisheries and Aquaculture National Forest Policy Statement Implementation Sub-committee
NPWS	National Parks and Wildlife Service
NRMMC	Natural Resource Management Ministerial Council
NRS	National Reserve System

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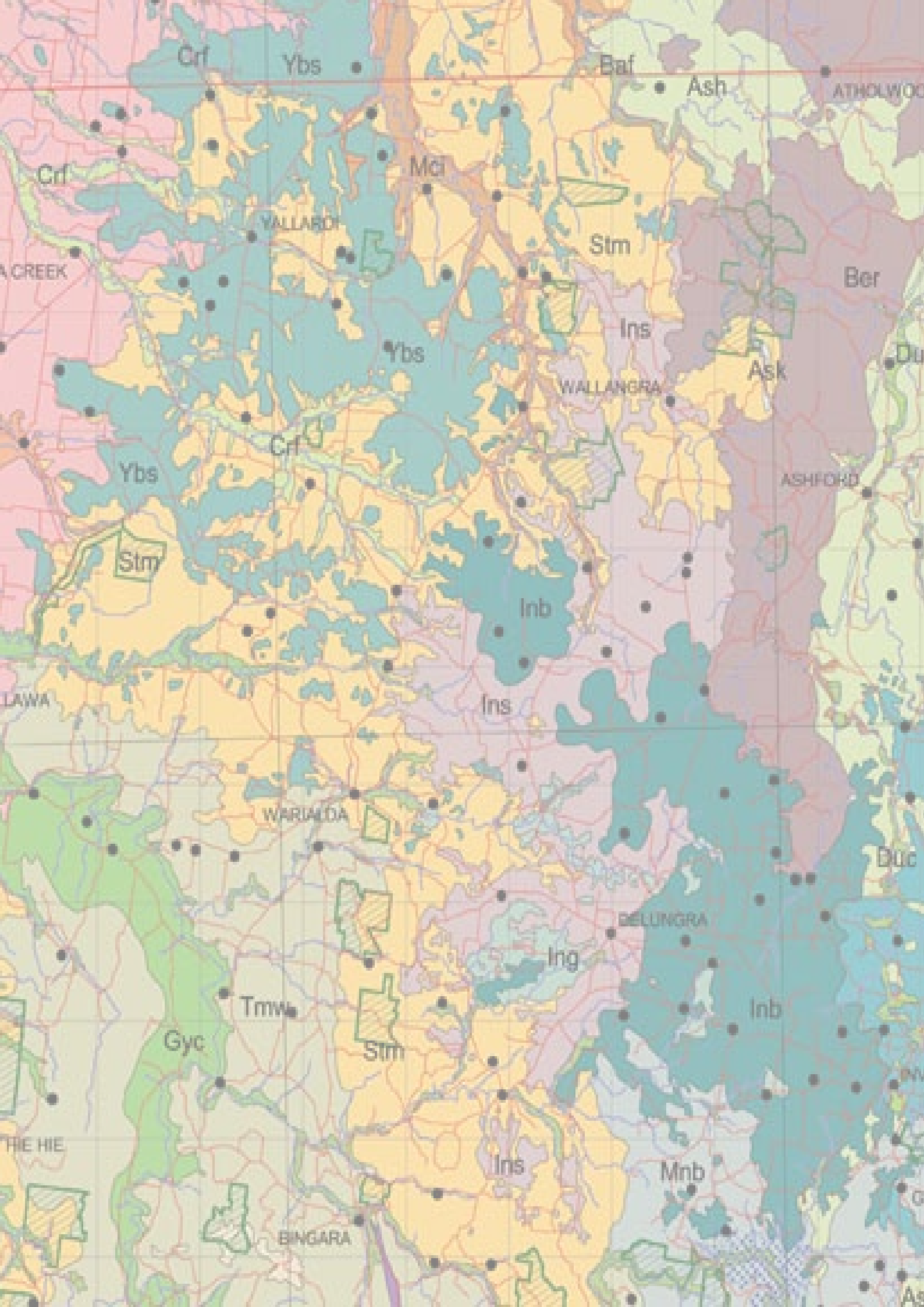
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