AUSTRALIAN GUIDELINES FOR ESTABLISHING THE NATIONAL RESERVE SYSTEM

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Foreword

The *Australian Guidelines for Establishing the National Reserve System* have been prepared to assist government agencies, non-government organisations and the community in the development of the National Reserve System (NRS), and to assist stakeholders in the understanding of this process. The *Guidelines* will be applied in the delivery of the National Reserve System Program (NRSP), a program of the Commonwealth Government's Natural Heritage Trust of Australia.

The *Guidelines* were developed by the National Reserve System Scientific Taskforce of the Australian and New Zealand Environment and Conservation Council (ANZECC). They build upon the framework provided by the Interim Biogeographic Regionalisation for Australia (Thackway and Cresswell (Eds), 1995), otherwise known as IBRA, and should be read in conjunction with that document.

The previous version of these guidelines, the *Interim Scientific Guidelines for Establishing the National Reserve System,* was endorsed by ANZECC in June 1997. The Interim Guidelines have now been revised following public comment in October and November 1998 as a prelude to their redrafting. This version of the *Guidelines* has drawn upon the format developed for the *Guidelines for Establishing the National Representative System of Marine Protected Areas* to promote consistency in approach for terrestrial and marine environments. The *Guidelines* were endorsed by ANZECC Standing Committee on Conservation in July 1999.

The *Guidelines* have been formulated to provide a consistent national approach for developing the terrestrial protected area system. They are not intended to replicate or override existing State and Territory processes.

The *Guidelines* were developed for application across ecosystems other than forests and some specific woodland ecosystems, which are the subject of Regional Forest Agreement (RFA) processes. The *Guidelines* for the NRS are not intended to refine the RFA reserve outcomes.

Using the Guidelines

Part One- Understanding the NRS sets out the goal, regional framework, principles and outcomes of the NRSP.
Part Two- Establishing the NRS outlines the process for development of the NRS, and criteria for the identification and selection of protected areas.
Part Three- Monitoring and Evaluating the NRSP outlines the monitoring and evaluation process**.**

1 Part One – Understanding the National Reserve System

1.1 Introduction

Australia is a signatory to the Convention on Biodiversity which requests countries to: establish a system of protected areas to conserve biodiversity; develop guidelines for the selection, establishment and management of protected areas; and promote the protection of ecosystems, natural habitats and the maintenance of viable population of species.

At the national level the goal of a "Comprehensive, Adequate and Representative System of Reserves" for Australia is endorsed by the Commonwealth and State and Territory Governments, as signatories to the National Strategy for Conservation of Australia's Biological Diversity (NSCABD) and the National Forest Policy Statement.

Successive Governments have supported three processes to work towards a comprehensive, adequate and representative (CAR) system of reserves - the National Reserve System Program (NRSP), the Regional Forest Agreement (RFA) process and the National Representative System of Marine Protected Areas (NRSMPA).

- The NRSP focuses on ensuring rapid and significant improvements in the terrestrial reserve system. Its main priority addresses the key gaps in comprehensiveness at the national scale, using the Interim Biogeographic Regionalisation for Australia (IBRA) as its regional planning framework. The NRSP covers terrestrial ecosystems other than those considered under the RFA process. It seeks, particularly, to add poorly reserved environments to a national reserve system.
- The RFA process is focussed on specific forest and woodland ecosystems in specific forested regions and addresses the issue of comprehensiveness, adequacy and representativeness at the regional scale. RFAs are integrated strategies for establishing forest reserves and ecologically sustainable forest management that aims to achieve resource security for resource utilisation industries.
- The NRSMPA is being developed cooperatively by Commonwealth, State and Northern Territory agencies responsible for the conservation, protection and management of marine environments.

While these NRS guidelines are necessarily broader in scope than the JANIS ((Joint ANZECC/MCFFA (Ministerial Council for Forestry, Fisheries and Aquaculture) National Forest Policy Statement Implementation Subcommittee 1996)) criteria proposed by the National Forest Policy Statement (NFPS), common scientific concepts and terminology are maintained where appropriate.

1.2 Definition of a Protected Area and application to the National Reserve System

ANZECC has adopted the IUCN definition of a 'protected area' to apply to the National Reserve System as follows:
"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)

To be included in the national reserve system, an area must be a 'protected area', that is it must:

- be dedicated for the primary purpose of protection and maintenance of biological diversity,
- be able to be classified into one or more of the six IUCN Protected Area Managed Categories (see Appendix),
- be managed by legal or other effective means, which encompass both public protected areas managed by government agencies, and privately owned protected areas, including indigenous protected areas, with effective security of purpose, and
- contribute to the comprehensiveness, representativeness and adequacy of the National Reserve System.

1.3 The Goal of the NRSP

The goal of the NRSP is:

- to assist with the establishment of a comprehensive, adequate and representative system of protected areas to conserve Australia's native biodiversity.

The NRS will aim to contain samples of all ecosystems identified at an appropriate regional scale. It will also consider:

- the ecological requirements of rare or threatened species and rare or threatened ecological communities and ecosystems, in particular those listed in the *Environment Protection and Biodiversity Conservation Act 1999* and other State, Territory and local government legislation or policy instruments; and
- special groups of organisms, eg. species with specialised habitat requirements or wide-ranging or migratory species, or species vulnerable to threatening processes which may depend on reservation for their conservation.

1.4 The Regional Framework

The national and regional planning framework for the National Reserve System is provided by the Interim Biogeographic Regionalisation for Australia (IBRA), endorsed by ANZECC in 1995 and updated (Version 5.1) in 2000. The IBRA provides a broad-level break up of the Australian landmass into eighty five biogeographic regions (Figure 1).

The IBRA regions were derived by compiling climate, lithology/geology, landform, vegetation, flora and fauna, land use, and other attributes as needed. The best data and information available at the time for each State and Territory was used including field knowledge, published resource and environmental reports, continental data sets, and existing biogeographic regionalisations.

In order to provide a systematic framework for identifying the deficiencies in the existing system of protected areas, four conservation attributes were developed based on IBRA. The attributes were:

- reservation status of ecosystems and the percent area reservation in each IBRA region,

- the extent to which the existing system of protected area fails to include examples of the broad (vegetation types) ecosystems within an IBRA region,
- dominant land use and/or threatening processes within each IBRA region which places constraints and limitations to planning the NRS, and
- alternative conservation management measures.

The first three attributes have been used to derive draft priority IBRA regions for funding under the NRSP.

1.5 Principles for Developing the NRS

Development of the NRS is based on the following principles:

- The **Planning Framework** is provided by the Interim Biogeographic Regionalisation for Australia (IBRA).
- **Comprehensiveness**: The National Reserve System will include the full range of regional ecosystems recognised at an appropriate scale within and across each bioregion. Increasing the comprehensiveness of the national protected area system, particularly in those IBRA regions where biodiversity is poorly conserved in the protected area system, is the primary focus of the NRSP (Table 1).
- **Representativeness**: Areas selected for inclusion in the NRS should reasonably reflect the intrinsic variability of the ecosystems they represent (Table 1).
- **Adequacy**: The NRS will provide reservation of each ecosystem to the level necessary to provide ecological viability and integrity (Table 1).
- **Threat**: Selection of priority additions to the NRS will be based primarily on principles of comprehensiveness, viability and vulnerability to loss. Priority will be given to the addition to the reserve system of ecosystems where there is a high risk of loss and which may foreclose future options for the conservation of biodiversity within the region.
- **Precautionary principle**: The absence of scientific certainty is not a reason to postpone measures to establish protected areas which contribute to a comprehensive, adequate and representative national reserve system.
- **Landscape context**: The protected area system should maximise biodiversity conservation outcomes through the application of scientifically robust reserve design principles.
- **Management**: It is recognised that regional biodiversity conservation requires a mix of management strategies. These would include statutory protected areas and incentives that encourage voluntary partnerships for off-reserve conservation. Public and private protected areas would include covenanting arrangements, as well as conservation management measures and guidelines for ecologically sustainable land management.
- **Decision making**: Decision making processes should effectively integrate both long term and short term environmental, economic, social and equity considerations. These Guidelines endorse the principle of ‘least cost’, where an optimal reserve configuration can be established with the minimal economic and social cost to the community.

Figure 1: An Interim Biogeographic Regionalisation for Australia, Ver 5.1, 2000

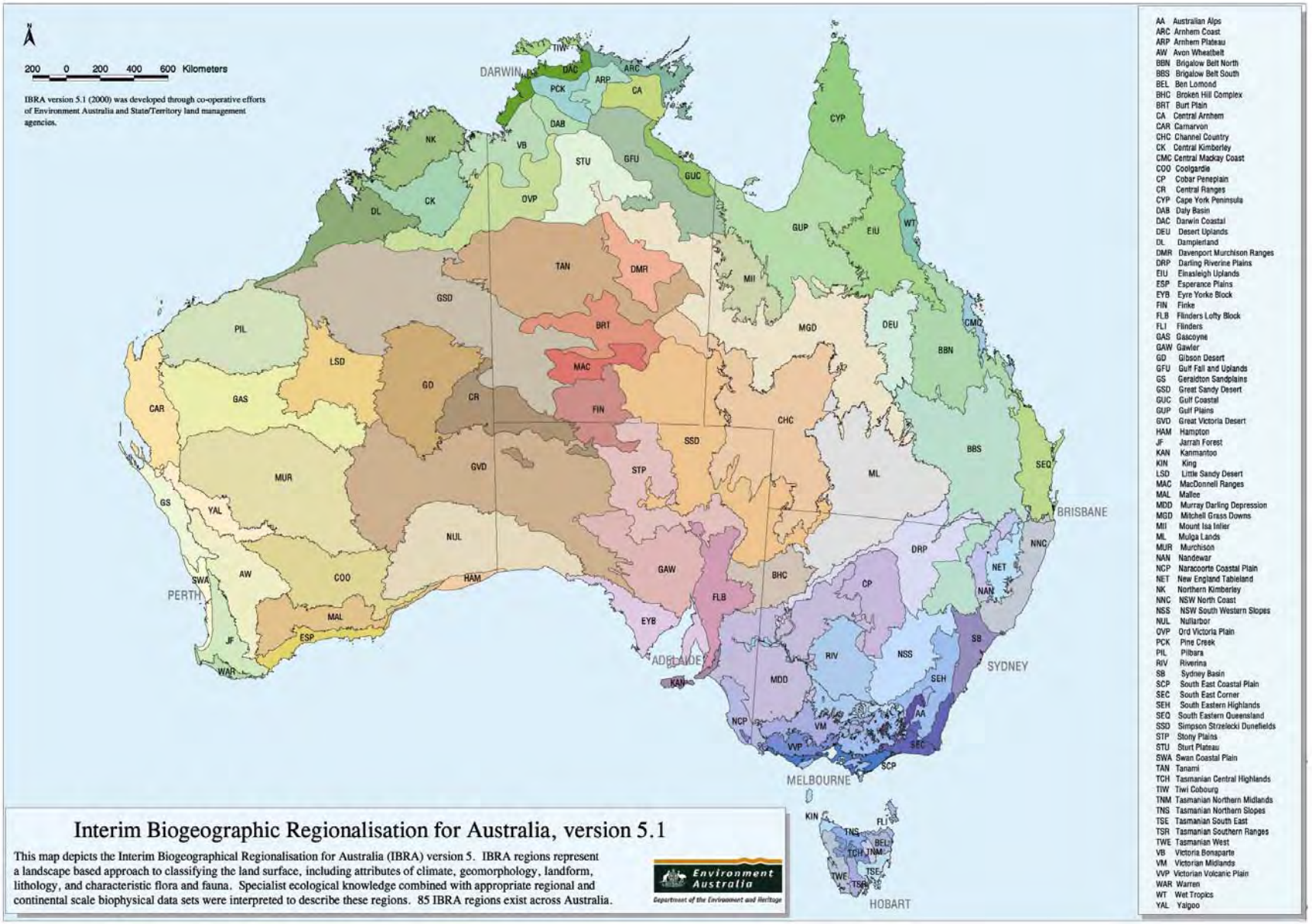

Table 1: Definition of the terms; Comprehensive, Adequate and Representative.

Comprehensive refers to the inclusion within protected areas of samples of each of the ecosystems discernible at the bioregional scale. It is the primary criterion because the likelihood of including functional assemblages of all species within a bioregion will be greatest when the full range of ecosystems present within an area is selected. The most appropriate ecosystem classification for reserve design will include attributes of vegetation structure and flora/fauna composition in conjunction with environmental attributes. Currently, there is no consistent description and mapping of such ecosystems at an appropriate scale across all Australian bioregions. Where bioregions currently lack such vegetation mapping, the best use should be made of all other available environmental classification and mapping information to define ecosystems.

Adequate refers to how much of each ecosystem should be included within a protected area network in order to provide ecological viability and integrity of populations, species and communities. The number of individuals (and hence area) needed for the long-term conservation of species varies appreciably between organisms. Species naturally occurring at very low densities (and/or requiring very large home ranges) and species, which may need to track resources which, ebb and flow across extensive landscapes will need large areas maintained. The area requirements for such species can be estimated and these will provide some guidelines for minimum area requirements for the particular ecosystems in which they occur. In the absence of such estimates, the criterion of adequacy can be considered by aiming to conserve at least a substantial proportion of the extent of every ecosystem. As a general rule, the greater the extent reserved, the more likely that the ecological functioning and species composition of an ecosystem will be maintained. However, there is no single threshold value that guarantees this persistence, for any or all ecosystems. Some ecosystems are much more threatened and less resilient than others and these may need higher levels of and more urgent, protection. Replication across the range of geographic, environmental and biotic domains should be considered. The principle to apply is that ecosystems are represented within the protected area network at more than one site, hence providing some greater safeguard against catastrophic events.

Representative is comprehensiveness considered at a finer scale, and infers that the variability within ecosystems is sampled within the reserve system. The consideration of representativeness aims to ensure that information on species distributions and intrinsic/genetic variations is included in the reserve system. The essential thing is that known species and genotypes are adequately reserved with the aim of maximising their viability within a bioregion, not necessarily that they are represented in every ecosystem in which they have been recorded.

1.6 Outcomes

The goals of the NRSP relate primarily to the conservation of biodiversity. The outcomes listed apply to the national reserve system as a whole and not necessarily to each individual protected area within the system.

Outcomes of the NRSP will include:

- Improved knowledge of ecosystem distribution, components and threatening processes in high priority or poorly known regions identified through the *Interim Biogeographic Regionalisation for Australia* (IBRA).
- A significant increase in the area reserved that contributes to a comprehensive, adequate and representative system of protected areas, with a focus on those regions where ecosystem representation is lowest.
- The establishment of protected areas which are dedicated to long term conservation across a range of land tenures including lands owned or managed by Indigenous people and other private lands, particularly where acquisition through purchase is not feasible.
- Plans of management or other management guidelines as agreed by the parties, for all properties acquired with the assistance of the National Reserve System Program to be prepared as soon as possible after purchase.
- The cooperative development by the Commonwealth and State/Territory of a strategic land acquisition program which focuses on those ecosystems and biodiversity elements that are unrepresented or under represented in the reserve system, using IBRA and these *Scientific Guidelines for Establishing the National Reserve System*.
- Government, community-based, and private landholder actions initiated to acquire and manage priority ecosystems for biodiversity conservation.
- Improved public awareness of the role and value of protected areas, and of implementing a range of conservation management measures to protect biodiversity.
- Identification of best management practices for protected area management on public and private lands.
- Development of a Collaborative Australian Protected Areas Database (CAPAD) in conjunction with the States and Territories.

2 Part Two – Establishing the NRS

2.1 The Development of the NRS

The protected area system on publicly owned land is a central part of the overall strategy for achieving conservation of biodiversity, and is complemented by measures taken on other public land and by cooperative measures on private land having natural conservation values. The agreed approach to developing the NRS draws upon the IBRA framework and emphasises the use of scientific data and reserve system design principles. It is recognised that information on a range of attributes is not complete for many regions, and the use of the best data available at an appropriate scale is emphasised. The process of identifying priorities should not be delayed by incomplete knowledge.

The focus on improving the comprehensiveness of the reserve system as a first priority arises from the recognition that significant regional and continental scale gaps persist in the protected area system. This focus is balanced by a similar recognition that threatening processes are foreclosing future opportunities for conservation and that the ecosystems most in need of protection should therefore be accorded priority for addition to the reserve system.

2.1.1 Developing National Reserve System Priorities

The development of priorities for the NRS is based on:

Assessment of gaps or shortfalls in the current system of reserves

The level of protection for all major ecosystems in each IBRA region will be assessed with special attention to comprehensiveness and conservation status. The Commonwealth with input from the States and Territories will facilitate a national gap analysis using IBRA regions, the Collaborative Protected Areas Database (CAPAD), and information provided by the jurisdictions.

Assessment of threatening processes

At the national scale there is a need to identify threatening processes and risks of ecosystem loss which may foreclose future options for the conservation of biodiversity within each IBRA region. In so far as this can be determined these assessments will be based on mapped data for threatening processes and risks at the national level.

The assessment of vulnerability to threatening processes should consider the spatial and temporal nature of threatening processes, the availability and effectiveness of management actions and the range of possible protection mechanisms. The likelihood of threats to ecosystems (eg. clearing) should be considered in the regional context to ensure the system of protected areas samples the viable areas of each ecosystem.

Setting priorities

Information on gaps in the NRS (eg. information obtained from the National Vegetation Initiative) and assessment of threatening processes will be combined to reassess and refine priorities for resource allocation under the NRSP, building upon the

current IBRA based processes. National priorities will be regularly reviewed as progress is made towards the establishment of the NRS and as threatening processes alter over time.

2.2 The Identification and Selection of Protected Areas

The comprehensiveness, adequacy and representativeness of the protected area system for the protection of biodiversity are the primary criteria for the identification of candidate protected areas for addition to the NRS.

Social, cultural and/or economic criteria can be layers in the decision making process applied primarily in the selection of sites from the candidate areas. The long-term conservation needs of candidate areas will be assessed in terms of the most appropriate conservation management options, including on and off reserve conservation management strategies.

The selection of a potential protected area needs to be examined in the context of the whole landscape to determine the most cost effective solution which provides security of protection for the identified biodiversity values. Identification and Selection Guidelines for the NRS are listed in Tables 2 and 3. The Guidelines give an indication of the questions that may be required to be considered, noting that the questions are not exhaustive and some questions will not be applicable to each potential protected area.

Table 2: Guidelines to be considered as a basis for identifying protected areas

Comprehensiveness Does the area: • increase the comprehensiveness of the NRS at a continental scale, and to what extent? • add to the reservation of the full range of ecosystems recognised at an appropriate scale across and within each IBRA region, and to what extent? ***Representativeness*** Does the area: • add to the representativeness of the NRS and to what degree?	• enable better representation of ecosystems across their geographical or environmental range within the IBRA region? • include the intrinsic variability of the ecosystems it represents? ***Adequacy*** Does the area: • provide long-term security for one or more ecosystems and associated species? • increase the security provided by the protected area system for one or more ecosystems and associated species, and to what degree?

Table 3: Guidelines to be used as a basis for selecting protected areas

Ecological importance

Does the area:

- contain a high diversity or abundance of ecosystems or species?
- represent a centre of endemism, or refugia?
- contain areas significant for migratory species?
- contain habitat for rare or threatened species?
- contain one or more areas which are a biologically functional, self sustaining ecological unit?

Also:

- to what degree has the area been protected from, or not been subject to, human induced change?
- does the area capture important geographic attributes such as biological interzones or environmental gradients?

Reserve system design

Is the area:

- based upon a bioregional assessment of reserve options aimed at maximising the comprehensiveness of the NRS?
- set in a landscape context with strong ecological integrity?
- selected to ensure that a 'core' area is protected with an effective buffer and the provision of adequate connectivity (ie. linkages/corridors) to other protected areas, or other areas which are managed sustainable for their natural resources?
- of sufficient extent to ensure that ecological functioning and species composition will be maintained?
- delineated to minimise 'boundary-to-area' ratio?
- designed to consider good neighbour policy and implications for on-going management?
- designed to minimise the impact of key threatening processes?

Economic Interests

Does the area:

- have current or likely use for the extraction or exploration of resources which may be foreclosed by declaration as a protected area?
- make an existing or potential contribution to economic value by virtue of its protection, eg recreation, tourism, refuge for economically important species?

Indigenous Interests

Does the area:

- contain indigenous cultural values?
- have traditional usage and/or current or potential economic value for Indigenous people?

Scientific Importance

Does the area:

- have existing or potential value for scientific research and/or environmental monitoring?

Social Interest

Does the area:

- have existing or potential value to the local, national or international community because of its heritage, cultural, aesthetic, educational, recreational or economic values?

Feasibility

Is the area:

- available?
- cost-effective in terms of acquisition, establishment and management?
- able to be managed to mitigate threatening processes and ensures persistence of ecosystems and species over time?

2.3 The roles of jurisdictions and involvement of the community, non-Government organisations and Indigenous peoples in the establishment of the NRSP

Although the NRSP will primarily be delivered through State and Territory nature conservation agencies, opportunities are being pursued with communities, non-Government organisations, Indigenous groups and the corporate sector to assist in the establishment of the NRS.

The Community Component of the NRSP provides access to the program to the wider community, both in assisting the purchase of land for the establishment of privately-owned protected areas, and in assisting landowners to establish privately-owned protected areas on their own property. Community Groups can assist in the development of the NRS by working with States and Territories in providing information useful for regional priority setting for the NRSP. This component of the program was introduced for the first time in 1998/99.

The Indigenous Protected Area Component of the NRSP supplements government-owned 'statutory' protected areas with land under indigenous ownership. Given the size of the Indigenous estate nationally, and the fact that many unique ecosystems are found only on these lands, this component is essential to the achievement of a truly comprehensive National Reserve System. The component also provides for indigenous traditional owner participation in the management of existing national parks and other protected areas by supporting negotiated cooperative management arrangements.

2.3.1 State, Territory and Commonwealth Agencies

The roles of the States, Territories and Commonwealth in the identification of terrestrial protected areas are outlined below:

For the NRSP:

- provide input to national gap analysis by conducting gap analyses based on protected area coverage with IBRA regions;
- carry out regional gap analyses to develop regional priorities relating to protected area selection;
- contribute to the terrestrial component of CAPAD;
- identify, select and declare protected areas for addition to the NRS;
- review and further develop IBRA as appropriate.

Additional Commonwealth actions:

To facilitate the progress of the NRSP, the Commonwealth will also;

- contribute funding to State and Territory agencies for appropriate projects leading to the declaration of protected areas;
- coordinate the future development of IBRA;
- coordinate other technical products that are required to underpin the development of the NRS, eg. the terrestrial component of CAPAD;
- assist with the development of national priorities through gap analysis;
- facilitate cross-jurisdictional cooperation and exchange of information;
- coordinate strategic planning for the NRSP including establishment guidelines; and
- ensure national consistency in the interpretation of the application of the IUCN protected area management categories to the NRS, using the NRS Scientific Taskforce in an advisory role.

3 Part Three – Monitoring and Evaluation of the NRSP

3.1 Monitoring and Evaluation

The National Reserve System Program, as one of the capital programs established under the Natural Heritage Trust, will be subject to an external mid- term evaluation in 1999. It is also planned to conduct a final evaluation of the Program in the latter half of 2001.

The Evaluations will need to consider issues such as:

- the increase in the comprehensiveness, adequacy and representativeness of ecosystems on private, public and indigenous lands included in protected area system through NRSP projects;
- the increase in the knowledge on ecosystem distribution, components and threatening processes in high priority and/or poorly known IBRA regions;
- the extent to which protected areas acquired or established with the assistance of the NRSP are managed in accordance with World Conservation Union (IUCN) criteria and appropriate management plans;
- progress towards the development and adoption of ANZECC best management standards for protected areas;and
- the level of awareness of, and interest in, the NRSP by landholders whose properties have or could make a valuable contribution to the NRS.

To ensure that the NRSP is appropriately targeted to assist in the development of a CAR national reserve system; States and Territories will need to provide biennial reports on progress in developing the NRS. The reports, based on IBRA regions, will include information on protected areas established through the NRSP and protected areas established as a part of a State and Territory program.

Each jurisdiction will advise how the comprehensiveness of the protected area system has been improved by the establishment of new protected areas, or by acquisition of areas for addition to the protected area system.

The process of evaluation will include review of the priorities of the NRSP based on improved data information. The allocation of conservation priorities within and between IBRA regions is an iterative process. The Commonwealth will assist in the reporting requirements for private protected areas and Indigenous protected areas.

A pro-forma for collating this information is provided at **Table 4.**

3.2 Ongoing Review and Enhancement

An integral part of the NRSP is continued refinement and advancement of methods and analytical tools to ensure that the identification and selection of protected areas uses best scientific practice and ecological and other data.

Actions include:

- review and refinement of IBRA;
- provision of refined ecosystem mapping at the national level, building on regional mapping;

- identification and mapping of ecosystems within regions, reporting of comprehensiveness against State targets in annual reports, and promoting consistency of ecosystem classifications between regions;
- review of NRS Program priorities for IBRA regions and ecosystems;
- testing and refinement of principles underlying reserve selection; and
- review of condition of ecosystems within IBRA, the threatening processes impacting on the ecosystems and the management measures to address the threatening processes.

Table 4

IBRA REGION:
Priority: Jurisdiction: Regional Conservation Strategies Available:

		1996		1998		2000	
		Area (ha)	%	Area (ha)	%	Area (ha)	%
Protected Area as % of region (IUCN I-IV)	Ia -						
	Ib -						
	II -						
	III -						
	IV -						
	Total						
Protected Area as % of region (IUCN V-VI)	V -						
	VI -						
	Total				**0**		

	IUCN Cat	Ia	1b	II	III	IV	V	VI
No. of management plans over number of protected areas by IUCN category (x/y)	**1996**							
	1998							
	2000							

Summary Data – Ecosystems within IBRA regions and Protected Areas (PA):

Percent of current areas within protected areas	Ecosystem	Current area and % across State/ Territory	Current area within bioregion (ha) & % of bioregion						Current area within protected areas (ha) & % in protected areas						Pre-European area (ha) & % in protected areas					
			1996		1998		2000		1996		1998		2000		1996		1998		2000	
			Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
0%																				
<5%																				
5-10%																				
>10%																				

Glossary

Adequacy	The maintenance of the ecological viability and integrity of populations, species and communities.
Biodiversity	The variety of life forms: the different plants, animals and micro-organisms, the genes they contain, and the ecosystems they form. It is usually considered at three levels: genetic diversity, species diversity and ecosystem diversity.
Biogeographic Region	A biogeographic region, or bioregion, is a region in which the boundaries are determined by vegetation cover, and the earth's physical features and climate.
CAR reserve system	A system of protected areas that address comprehensiveness, adequacy and representativeness (CAR) of all its component ecosystems.
Complementarity	The need for individual protected areas to complement, rather than excessively replicate, one another in terms of the features they contain. Following the complementarity concept leads to targets for representation of the features in a region being achieved more efficiently (in terms of the number or extent of protected areas) thereby increasing the likelihood of those targets being met.
Comprehensiveness	Inclusion of the full range of ecosystems recognised at an appropriate scale within and across each bioregion (see ecosystem)
Condition	The current state of ecosystems compared to what would be considered pristine.
Conservation	The protection, maintenance, management, sustainable use, restoration and enhancement of the natural environment.
Conservation status	The extent to which ecosystems remain in their natural condition in relation to their pre-European distribution.
Covenant	A voluntary legal undertaking by a landowner registered on the land title for the purposes of protection of some nominated value or condition of the land.
Ecosystem	A unique unit comprising a recognisable floristic composition in combination with substrate (lithology/geology layers) and position within the landscape, and including their component biota (where known). An ecosystem map unit should normally be discriminated at a scale of 1:100,000 to 1:250,000.
Endemic	Restricted to a specified region or site.

Genetic diversity	Variation in the genetic composition between individuals, populations or species.
IBRA	Interim Biogeographic Regionalisation for Australia; a bioregional framework delineating “natural” regions or “landscape pattern” in each State and Territory which reflects the biophysical, environmental and vegetation factors (e.g. climate, lithology, landform, vegetation, flora and fauna and landuse).
Irreplaceability	The potential contribution of any area to a reservation goal; and the extent to which the options for a representative reserve system are lost if that area is lost.
IUCN	The World Conservation Union (formerly known as the International Union for the Conservation of Nature).
Off reserve	All lands not currently within a gazetted protected area.
Protected area	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).
Representativeness	The principle that those areas that are selected for inclusion in reserves reasonably reflect the biotic diversity of the ecosystems from which they derive.
Threatened species or ecological community	A species or ecological community that is vulnerable, endangered or presumed extinct. Ecological community is the living component of an ecosystem.
Threatening processes	Those limiting factors that threaten, or may threaten, the survival, abundance or evolutionary development of a native species or ecological community.
Viability	The likelihood of long-term survival of the example/population of a particular ecosystem or species.
Vulnerability	The predisposition of an area to a threatening process. Vulnerability can be expressed in terms of (1) the likelihood of an area being affected by the process; or (2) the time frame over which the area will be affected. Threatening processes could potentially include land clearing, logging and rising saline water tables. Vulnerability is a fundamental consideration in conservation planning given that the basic purpose of conservation areas is to separate elements of biodiversity from processes that threaten their persistence *in situ*.

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Appendix 1 Summary and objectives of IUCN Protected Area Management Categories

CATEGORY Ia Strict Nature Reserve: Protected Area managed mainly for science

Area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring.

Objectives:

- to preserve habitats, ecosystems and species in as undisturbed state as possible;
- to maintain genetic resources in a dynamic and revolutionary state;
- to maintain established ecological processes;
- to safeguard structural landscape features or rock exposures;
- to secure examples of the natural environment for scientific studies, environmental monitoring and education, including baseline areas from which all avoidable access is excluded;
- to minimise disturbance by careful planning and execution of research and other approved activities;
- to limit public access.

CATEGORY Ib Wilderness Area: Protected Area managed mainly for wilderness protection

Large area of unmodified or slightly modified land and/or sea, retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition.

Objectives:

- to ensure that future generations have the opportunity to experience understanding and enjoyment of areas that have been largely undisturbed by human action over a long period of time;
- to maintain the essential natural attributes and qualities of the environment over the long term;
- to provide for public access at levels and of a type which will serve best the physical and spiritual well-being of visitors and maintain the wilderness qualities of the area for present and future generations;
- to enable indigenous human communities living at low density and in balance with the available resources to maintain their lifestyle.

CATEGORY II National Park: Protected Area managed mainly for ecosystem conservation and recreation

Natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for this and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.

Objectives:

- to protect natural and scenic areas on national and international significance for spiritual, scientific, educational, recreational or tourist purposes;
- to perpetuate, in as natural a state as possible, representative examples of physiographic regions, biotic communities, genetic resources, and species, to provide ecological stability and diversity;
- to manage visitor use for inspirational, educational, cultural and recreational purposes at a level which will maintain the area in a natural state or near natural state;
- to eliminate and thereafter prevent exploitation or occupation inimical to the purposes of designation;
- to maintain respect for the ecological, geomorphologic, sacred and aesthetic attributes which warranted designation; and
- to take into account the needs of indigenous people, including subsistence, in so far as these will not adversely affect the other objectives of management.

CATEGORY III Natural Monument: Protected Area managed for conservation of specific natural features

Area containing one or more specific natural or natural/cultural feature which is of outstanding value because of its inherent rarity, representative or aesthetic qualities or cultural significance.

Objectives:

- to protect or preserve in perpetuity specific outstanding natural features because of their natural significance, unique or representational quality, and/or spiritual connotations;
- to an extant consistent with the foregoing objective, to provide opportunities for research, education, interpretation and public appreciation;
- to eliminate and thereafter prevent exploitation or occupation inimical to the purpose of designation; and
- to deliver to any resident population such benefits as are consistent with the other objectives of management.

CATEGORY IV Habitat/Species Management Area: Protected Area managed mainly for conservation through management intervention

Area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species.

Objectives:

- to secure and maintain the habitat conditions necessary to protect significant species, groups of species, biotic communities or physical features of the environment where these require specific human manipulation for optimum management;
- to facilitate scientific research and environmental monitoring as primary activities associated with sustainable resource management;
- to develop limited areas for public education and appreciation of the characteristics of the habitats concerned and of the work of wildlife management;

- to eliminate and thereafter prevent exploitation or occupation inimical to the purposes of designation; and
- to deliver such benefits to people living within the designated areas as are consistent with the other objectives of management.

CATEGORY V Protected Landscape/Seascape: Protected Areas managed mainly for landscape/seascape conservation and recreation

Area of land, with coast and seas as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, cultural and/or ecological value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area.

Objectives:

- to maintain the harmonious interaction of nature and culture through the protection of landscape and/or seascape and the continuation of traditional land uses, building practices and social and cultural manifestations;
- to support lifestyles and economic activities which are in harmony with nature and the preservation of the social and cultural fabric of the communities concerned;
- to maintain the diversity of landscape and habitat, and of associated species and ecosystems;
- to eliminate where necessary, and thereafter prevent, land uses and activities that are inappropriate in scale and/or character;
- to provide opportunities for public enjoyment through recreation and tourism appropriate in type and scale to the essential qualities of the areas;
- to encourage scientific and educational activities which will contribute to the long term well-being of resident populations and to the development of public support for the environmental protection of such areas; and
- to bring benefits to, and to contribute to the welfare of, the local community through the provision of natural products (such as forest and fisheries products) and services (such as clean water or income derived from sustainable forms of tourism).

CATEGORY VI Managed Resource Protected Areas: Protected Area managed mainly for the sustainable use of natural ecosystems

Area containing predominantly unmodified natural systems, managed to ensure long term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to meet community needs.

Objectives:

- to protect and maintain the biological diversity and other natural values of the area in the long term;
- to promote sound management practices for sustainable production purposes;
- to protect the natural resource base from being alienated for other land-use purposes that would be detrimental to the area's biological diversity; and
- to contribute to regional and national development.

Source: IUCN (1994). *Guidelines for protected area management categories.* Commission on National Parks and Protected Areas with the assistance of the World Conservation Monitoring Centre. IUCN, Gland, Switzerland.
