

***COONGIE LAKES Ramsar
WETLANDS
A Plan for Wise Use***

DRAFT for PUBLIC CONSULTATION

NOVEMBER 1999



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Aboriginal Issues: Annie Nicholson of Culture and Heritage consulted a range of organisations, heritage groups and native title claimant groups that included: the North East Aboriginal Lands Heritage Committee, the Dieri Mitha Council claimant group, the Goolburri Aboriginal Corporation Land Council representing the Yandruwandha people claimant group, the Dieri and Yandruwandha people claimant group, the Wangkangurru and Yarluyandi claimant group. Government agencies that were consulted include the Department for Environment, Heritage and Aboriginal Affairs Division of State Aboriginal Affairs (DoSAA), National Parks and Wildlife Broken Hill NSW, and NPW Birdsville Queensland.

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FOREWORD

Coongie Lakes Wetlands as Wetlands of International Importance in June 1987 has provided recognition of their substantial biological, social and economic value to South Australia, Australia and the world.

The Convention on Wetlands of International Importance Especially as Waterfowl Habitat, better known as the Ramsar Convention advocates wise use of wetlands while at the same time maintaining their ecological character. These principles are compatible with those of South Australia's National Parks and Wildlife Act Regional Reserve classification under which a significant proportion of these wetlands are also managed.

The Ramsar Convention's wise use principles provide a framework for the protection of the biodiversity values of the area and a stimulus for improved environmental management while allowing for the generation of significant wealth from the area. There is significant evidence that we are achieving these aims in the Coongie Lakes Ramsar Wetlands.

Essential ingredients for the continued protection of the ecological character and concurrent wise use of the Coongie Lakes Ramsar Wetlands will be

- *maintenance of the near natural flows of the Cooper Creek,*
- *continued enhancement of land management practices,*
- *development and implementation of conservation strategies,*
- *increased understanding and knowledge of the ecological and hydrological functioning of the wetlands and,*
- *combined and co-operative effort of the local and wider community, industry and governments to achieve these goals.*

I look forward to the community's support in the future management of these internationally important wetlands. I have much pleasure in releasing this report to the community for discussion and comment.



HON DOROTHY KOTZ MP

MINISTER FOR ENVIRONMENT AND HERITAGE
MINISTER FOR ABORIGINAL AFFAIRS



1 SUMMARY

1. Australia became the first signatory to the *Convention on Wetlands of International Importance Especially as Waterfowl Habitat* (commonly called the Ramsar convention) in December 1975.
2. The Coongie Lakes were designated to the list of wetlands on International Importance on June 15th, 1987.
3. The Wise Use guidelines of the convention call upon the contracting parties to develop integrated management plans for designated wetlands.
4. Wise Use is sustainable utilisation for the benefit of humankind in a way compatible with the maintenance of the natural properties of the ecosystem.
5. State and Commonwealth Governments recognise the obligations of international conventions and domestic and intergovernmental Agreements. In relation to the Coongie Lakes Ramsar Wetlands specific obligations are to the Ramsar Convention on Wetlands, the Heads of Agreement in Relation to the Lake Eyre Basin, the Inter-governmental Agreement on the Environment and the COAG Water Reform Framework.
6. In developing this draft plan of management, the local community, industry and interest groups were consulted and prepared issues papers. A workshop was convened of all interested parties to discuss a draft of this plan.
7. The VISION for the Coongie Lakes Wetlands of International Importance is: *Maintenance of the ecological and hydrological character of the wetland while utilising the natural resources of the area in a sustainable manner.*
8. The AIM of this Plan for Wise Use is: *To document a framework and process for the coordinated management of the Coongie Lakes Ramsar Wetlands.*
9. Our five COMMITMENTS to the Coongie Lakes Wetlands are:
 - *Naturally Flowing Cooper Creek*
 - *Wise Use*
 - *Conserving Biodiversity and Heritage*
 - *Better Understanding, and*
 - *Working Together*
10. The RESPONSIBILITY AND CARE for the wise use and conservation of the wetlands lies with Government, industry and the community. There are many mechanisms established under South Australian law to make decisions about and implement wise use. There are also many community based groups that influence the management of the region in different ways. This plan recognises these pre-existing structures and arrangements.
11. The Coongie Lakes Ramsar Wetlands are valued for a wide range of benefits:

The wetlands are very diverse, both biologically and hydrologically and retain their ecological integrity. The water bird diversity is high for an arid wetland with 74 waterbird species and 11 other wetland dependant species recorded for the area. The freshwater fish community of the Coongie Lakes and Cooper Creek is representative of, and unique to the Lake Eyre Basin. It includes 12 native fish species, two of which are endemic. There are only two introduced fish species.

The hydrological diversity of the area stems from the arid and variable nature of the Cooper system. The Cooper Creek and Coongie Lakes are a complex mosaic of lakes, channels, internal deltas and interdune floodouts that provide a wide variety of habitats. It is also a relatively unaltered and unpolluted catchment with natural flows. This contrasts with the large basins in Australia that have been extensively modified for domestic and agricultural purposes.

The Yandruwandha, Yauraworka, Deiri, Wangkangurru and Wangkumara Aboriginal people claim affinity with sections of this Ramsar site. There are also significant places relating to the early non-

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aboriginal history of the area, particularly the infamous Burke and Wills expedition and the Australian Inland Mission.

The wetlands are underlain by oil and gas reserves that provide energy requirements and economic benefits to South Australia and New South Wales.

The area is attracting an increasing number of tourists, estimated to be currently in the order of 30 000 to 50 000 visitor nights per annum. The tourism industry provides significant economic gains for the region.

The pastoral industry has been operating in the area for over 100 years. The high quality floodplain pastures allows the production of premium, chemical free beef that sells on both the Australian and international markets.

The Cooper Creek system is a well known and popular recreational fishing destination. There is one miscellaneous fishery licence for the harvest of Lake Eyre Callop in the Cooper system in South Australia.

The area has been formally recognised by the Australian community for its existence, aesthetic and bequest values by the listing of various places within the wetlands on the Register of the National Estate, the State Heritage Register, by proclamation of Innamincka Regional Reserve under the *National Parks and Wildlife Act 1972* and by special purpose fencing and zoning to protect sensitive habitats.

12. The outcomes of this plan for wise use are:

Naturally Flowing Cooper Creek

- 1) Continuation of the hydrological diversity of the Cooper Creek flowing into South Australia by ensuring water allocations that are consistent with the Heads of Agreement and the Council of Australian Governments Water Reform Framework.

Wise Use

- 2) A defined boundary to the wetlands that appropriately reflects the diversity of ecological and hydrological characteristics of the Coongie Lakes Ramsar site.
- 3) The wetlands zoned as (1) core (frequently flooded) wetland, (2) greater wetland system and (3) non-wetland area. Each zone to have proscribed activities, management prescriptions and specific resource-use codes of practice that tailor management to the characteristics of these zones, so that their wetland values are protected, thus allowing for Wise Use of the resources within the Ramsar wetlands.

Conserving Biodiversity and Heritage

- 4) The maintenance of the near natural hydrological and ecological functioning of the Coongie Lakes Ramsar Wetlands.
- 5) Preservation of the cultural landscape.
- 6) Continuation and enhancement of the living culture of the wetland area.

Better Understanding

- 7) An expanding knowledge base to improve understanding of wetland functions.

Working Together

- 8) People working together to achieve conservation and wise use of this wetland and community support for the outcomes and actions of this plan.

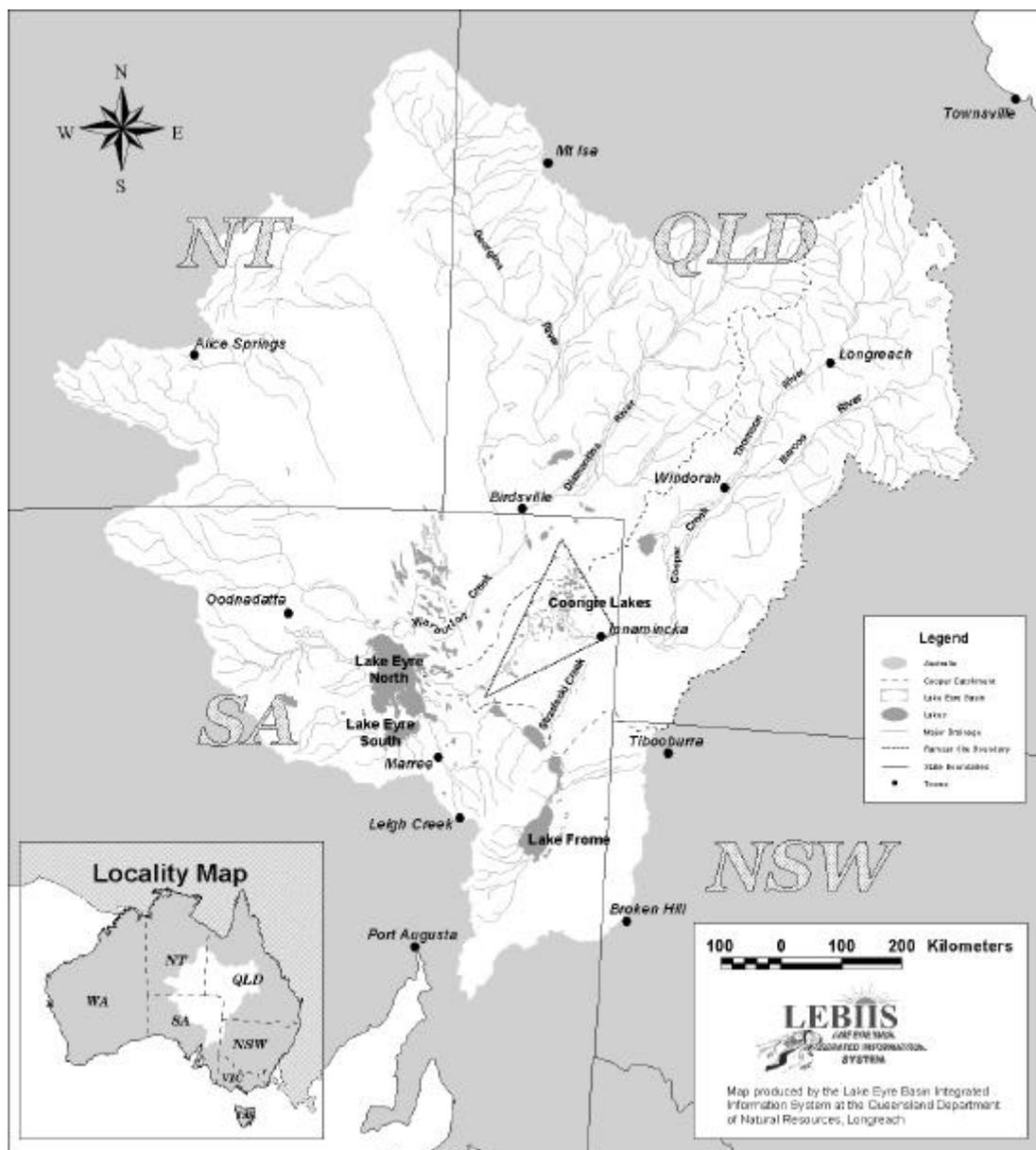
13. ***This plan is now open for public comment. Submissions made during the public comment phase will be considered in the final drafting of the plan.***

2 WHERE AND WHAT ARE THE COONGIE LAKES RAMSAR WETLANDS?

Where?

The Coongie Lakes Ramsar Wetlands are located in the far north-east of the State of South Australia. They are wetlands and floodouts of the Cooper Creek that has its headwaters in Queensland and flows into South Australia near Innamincka township. The Ramsar site includes the Cooper Creek system from the South Australian – Queensland border downstream to Lake Hope (L. Pando Penunie), the North-west Branch of Cooper Creek, the Northern overflow and their many waterholes and terminal lakes. The Cooper Creek catchment is part of the Lake Eyre Basin catchment (LEB). The LEB drains internally to Lake Eyre, a large saline playa lake in central Australia.

Figure 1 Location of the Coongie Lakes Ramsar Wetlands site within the Lake Eyre Basin



What?

The Coongie Lakes Ramsar Wetlands are a complex and extensive ephemeral and semi-permanent freshwater wetland system, located in the arid centre of Australia. The wetlands are comprised of channels, waterholes, lakes, internal deltas and numerous shallow floodout plains, interdune corridors and swamps.



Deep Waterholes



Channels



Lakes



Interdune floodouts

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WATER COURSES AND OUTWASH PLAINS

-  Cr Cooper
Channels/ lakes/ swamps and crabhole flats of Cooper Creek floodplain. Main channels with coolibah/ river red gum (upstream channels)/ bean tree/ river cooba/ river emubush/ Broughton willow and lignum; swamps with Queensland bluebush/ canegrass/ old man saltbush/ samphire and lignum; lakes lined with coolibah/ river couch and rushes; crabhole flats with copperburrs and herbs; pale dunes and sand plains with whitewood/ sandhill wattle and sandhill canegrass; red longitudinal dunes with sandhill wattle and sandhill canegrass; interdune flats with variable soils and vegetation.
-  Cy Cooryaninna
Dm Diamantina
Fm Frome
Kc Kachumba
Mg Mulligan
Ps Paradise
Wr Warburton

GIBBER PLAINS/TABLELAND AND MESES

-  Mr Merninie
Gibber tableland and mesas of eastern Innamincka. Tableland and low hills with Mitchell grass/ neverfail and copperburrs; mesas with emubushes/ gidgee and mulga over bladder saltbush; drainage lines with red mulga/ gidgee and river red gum; alluvial plains with Mitchell grass/ copperburrs and forbs.
-  Kn Koonchera
Gently undulating gibber plains with Mitchell grass/ katoora and bladder saltbush. Run on depressions and swamps with Queensland bluebush/ cottonbush/ canegrass and neverfail; scattered long red sand dunes with sandhill, canegrass and desert cynanchum; drainage lines with coolibah/ plum bush /river emubush and river cooba.
-  Blo Bloodwood
-  Fl Flint
Ht Hermit
Kl Kalatinka
Kp Kopi
Lm Lamamour
Mp Mumpie
Oo Oodnadatta
Ss Sturts

SAND DUNES AND SAND PLAINS

-  Kt Kertietoonga
Dunefields/ swamps and lakes of Pandie Pandie/ western Cordillo Downs and northern Innamincka. Long red dunes with lobed spinifex/ sandhill, canegrass and scattered sandhill wattle and narrowleaf hopbush; variable interdune flats with blackbush/ starbush neverfail on clay flats and lobed spinifex on sandy flats; swamps with canegrass and lignum; lakes fringed with samphire and copperburrs on lake beds.
-  Sz Strzelecki
Dunefields of the Strzelecki Desert. Red dunes with whitewood/ malga/ sandhill wattle/ sandhill canegrass and lobed with spinifex; sandy interdune flats with colony wattle/ straggly corkbark over copperburrs and annual grasses; clay swales with Mitchell grass/ neverfail and plate grass.
Ep Eulpa
Jj Jeljendi
Kk Kallakoopah

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- Tr Tirari
- Wg Wirringina
- Wk Wongianguru
-  Mq Marqualpie
-  De Della
- LAKE COUNRTY
-  Ey Eyre
- Bc Blanche
-  Lakes
-  Swamps and floodplains
-  Coongie Lakes wetlands of international importance (Ramsar Convention)
-  Public roads
-  Vehicle track
- Drainage
-  State border

3 WHAT IS THE RAMSAR CONVENTION ?

Concerned at the rapidity with which large stretches of marshland and wetlands in Europe were being reclaimed or otherwise destroyed, the International Union for the Conservation of Nature and Natural Resources (IUCN) joined forces with the International Waterfowl Research Bureau (IWRB) and the International Council for Bird Preservation (ICBP) to launch in 1962 a programme to increase awareness of the importance of wetlands to humanity and to contribute to their conservation.¹

Successive meetings over the next eight years lead to the development of the text of the *Convention on Wetlands of International Importance Especially as Waterfowl Habitat*. This text, adopted in Ramsar, a small town in Iran, in February 1971 is known as the **Convention on Wetlands** (Ramsar Iran, 1971) and popularly, as the “Ramsar Convention”².

The official name of the treaty reflects the original emphasis upon the conservation and wise use of wetlands primarily as habitat for waterbirds. Over the years, however, the Convention has broadened its scope to cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation and for the well-being of human communities².

Australia became the first signatory to the Convention in December 1975.

The Coongie Lakes Ramsar Wetlands was designated to the list of Wetlands of International Importance on the 15th June 1987 (See original Ramsar Information Sheet Appendix A).

The Australian Government as a Contracting Party to the Ramsar Convention has undertaken to:

- designate at least one wetland for inclusion in the list of Wetlands of International Importance and maintain its ecological character
- formulate and implement planning so as to promote Wise Use of all wetlands
- promote Wise Use of all wetlands through formulation and implementation of plans
- promote the conservation of wetlands by:
 - establishing nature reserves at wetlands whether or not they are Ramsar sites
 - the exchange of data and publication regarding wetlands
 - training in the fields of wetland research, management and wardening, and
- consult about implementation of the Convention especially with regards transfrontier shared water systems, shared species and development aid for wetland projects³.

The Wise Use Guidelines call upon Contracting Parties to:

- adopt national wetland policies involving review of existing legislation and institutional arrangements to deal with wetland matters
- develop programs of wetland inventory, monitoring, research, training and public awareness, and
- take action at wetland sites, involving the development of integrated management plans⁴.

Wise Use

Wetlands worldwide support a very large number of human activities which depend directly on the proper functioning of the wetland ecosystem. Such activities, which contribute to a Nation's gross national product and to the welfare of local people, are totally dependent on the maintenance of the ecological character of the wetlands.⁵

The concept of **Wise Use** is central to all aspects of the convention⁶ including the development of integrated management plans for wetlands listed under the Ramsar convention.

Wise Use of wetlands is⁷:

their **sustainable utilisation** for the benefit of humankind
in a way compatible with the maintenance of
the **natural properties** of the ecosystem.

Sustainable utilisation is:

human use of a wetland so that it may yield
the greatest continuous benefit to present generations
while maintaining its potential to meet the needs and aspirations of future generations

Natural Properties are:

those physical, biological or chemical components,
such as soil, water, plants, animals and nutrients
and the interactions between them.

The implementation of the Wise Use principle at National, State and site level involves:

- establishment of mechanisms and procedures for an integrated, multidisciplinary approach to planning and the implementation of projects concerning wetlands
- review of existing legislation and government policies including their application and adoption
- increasing knowledge and awareness of wetlands and their values
- review of the status of wetlands in the National context and the compilation of a National wetlands inventory
- addressing the problems of a particular wetlands site by integrating environmental considerations into their management, regulated utilisation, establishment of management plans, establishment of nature reserves and, if necessary, restoration⁸.

Ecological Character

The principal undertaking of Contracting Parties with respect to listed wetlands is to promote their conservation with the aim of preventing **changes to their ecological character**.

Ecological character is:

the structure and inter-relationships between the biological, chemical and physical components of the wetland. These derive from the interactions of individual **processes, functions** and **values** of the ecosystem(s).

Change in ecological character of a wetland is:

the impairment or imbalance in any of those **processes** and **functions** which maintain the wetland and its **products, attributes** and **values**.

Processes are changes or reactions which occur naturally within wetland ecosystems. They may be physical, chemical or biological.

Functions are activities or actions that occur naturally in wetlands as a product of the interactions between the ecosystem structure and processes. Functions include flood water control, nutrient, sediment and contaminant retention, food web support, shoreline stabilization and erosion controls, storm protection, and stabilization of local climatic conditions, particularly rainfall and temperature.

Products generated by wetlands include wildlife resources, fisheries, forest resources, forage resources, agricultural resources and water supply. These products are generated by the interactions between the biological, chemical and physical components of a wetland.

Attributes of a wetland include biological diversity and unique cultural heritage features. These attributes may lead to certain uses or the derivation of particular products, but they may also have intrinsic, unquantifiable importance.

Values are the perceived benefits to society, either direct or indirect, that result from wetland functions. These values include human welfare, environmental quality and wildlife support.

4 WHY PLAN FOR WISE USE ?

While the wetlands are often resilient to human use they should not be used in a way which would jeopardise their ecological character and benefit for future generations. The consistent message from case studies on wetlands around the world is that to conserve and protect these wetlands for future generations, we require political will, best use of existing knowledge, coordination of management, research, training and evaluation of current management.

The Coongie Lakes Ramsar Wetlands has substantial social, biological and economic value to South Australia, Australia and the world. The river processes of the Cooper Creek support a diverse range of river, lake and floodplain ecosystems, which in turn support a diversity of land uses. The land uses include biodiversity and cultural heritage conservation, petroleum and mineral exploration and production, pastoral land use, fishing, tourism and recreation. In the past these uses were addressed sectorally, giving a piecemeal approach to the conservation and Wise Use of the resources. However in the recent past the level of integration of use has improved with cooperation between major land users. This level of integrated management is achieved through a shared vision and a commitment by all people and industries involved to work together and to continue to improve our understanding of these wetlands, in order to maintain their ecological character and conserve their biodiversity and heritage values.

Although there is no statutory basis for this plan, the South Australian and Commonwealth Governments recognise the obligations of international conventions, and domestic and intergovernmental agreements. Several of these are of particular relevance to this plan: the Ramsar Convention, The Heads of Agreement in relation to the Lake Eyre Basin, the Inter-governmental Agreement on the Environment (1992) and the Council of Australian Governments (COAG) Water Reform Framework.

The Ramsar Convention on Wetlands

The listing of Coongie Lakes Ramsar Wetlands under this Convention is recognition of the significance of the wetland to South Australia, Australia and internationally.

The Heads of Agreement in Relation to the Lake Eyre Basin

The South Australian, Queensland and Commonwealth Governments have adopted a Heads of Agreement in relation to the management of the Lake Eyre Basin. This Agreement is a statement of acknowledgment, understanding and intention to establish an institutional structure that will provide for:

- high level interaction between the respective Governments, community involvement, scientific and technical input and the views of the Lake Eyre Basin Coordinating Group
- the development and adoption of management plans or policies for flow management regimes that reflect current near natural and variable flows of the river systems, objectives for land and water management, catchment management strategies to ensure that the objectives are met, research and monitoring requirements and programs to meet those requirements.

These governments are working towards finalization of a formal Agreement, the provisions of which will be ratified by enabling legislation.

The 1992 Inter-governmental Agreement on the Environment

The 1992 Inter-governmental Agreement on the Environment acknowledges the importance of adopting sound practices as a basis for ecologically sustainable development for the benefit of both the environment and the community. This agreement also describes the various roles and responsibilities of the Commonwealth and State and Territory Governemnts.

The COAG Water Reform Framework

In 1994 the Council of Australian Governments (COAG) agreed to a Water Reform Framework. This framework sets out a strategic package of interrelated economic and environmental reforms for

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management of Australian water resources. The framework includes provisions for water entitlements and trading, environmental requirements, institutional reform, public consultation and education, water pricing and research⁹.

The Ramsar Planning Process

With support from the Commonwealth, the Government of South Australia appointed a project officer to undertake a community consultation process and develop this draft plan for public comment.

The consultation process involved the establishment of six working groups, representing the six key sector interests in the area namely: conservation, water resources, Aboriginal, pastoral, tourism and recreation, and petroleum and mineral exploration and production. These working groups each prepared an issues paper that outlined the sector's vision, aims, values, issues and best management practices and made recommendations for the future management of the area.

The issues papers were then used as a basis for the development of a Workshop Draft Coongie Lakes Wetlands Plan for Wise Use. That draft was commented on by industry sectors, edited and a second workshop draft prepared and issued to all those invited to the subsequent workshop including working groups, Environment Australia, and Division of State Aboriginal Affairs. These workshop drafts provided information as a basis for discussions between the land managers and interested parties on a management framework for the wetlands. At a workshop held in Adelaide, those on the working groups and some other stakeholders were invited to edit the second workshop draft and agree on the text of this draft for public consultation.

This Draft for Comment

This draft plan of management for the Coongie Lakes Ramsar Wetlands is open for public comment for a minimum period of three months. Comments received during this phase of consultation will be considered in the preparation of the final Coongie Lakes Ramsar Wetlands – Plan for Wise Use.

5 VISION

The VISION for the COONGIE LAKES WETLANDS of international importance is:

the maintenance of the ecological and hydrological character of the wetland while utilizing the natural resources of the area in an ecologically sustainable manner.

6 AIM

The AIM of the COONGIE LAKES WETLANDS Plan for Wise Use is:

to document a framework and process for the coordinated management of the Coongie Lakes Ramsar Wetlands to ensure:

- maintenance of hydrological integrity and integration of the management of these wetlands with that of the catchment
- Wise Use of the resources, and recognition of existing uses
- maintenance of biological diversity and productivity
- government, industry, local and wider community involvement
- improved understanding of the wetland system

7 OUR COMMITMENTS

The COONGIE LAKES Ramsar WETLANDS PLAN FOR WISE USE

identifies strategies and actions to achieve five major commitments

ONE *Naturally Flowing Cooper Creek*

The maintenance of the current near natural and variable flows of the Cooper Creek is essential to the ecological integrity of the Coongie Lakes Ramsar Wetlands. Any increased extraction or diversion of water from the catchment would pose a risk to the ecological and hydrological integrity of the wetlands.

TWO *Wise Use*

The Coongie Lakes Ramsar Wetlands site supports industries of great economic importance to the region, the State and the Nation. The principles of Wise Use underpins the way in which the wetlands are managed, developed and conserved. Resource users and governments have developed policies and codes of practice which recognise these internationally accepted principles. These policies and codes need regular review and update to take account of new knowledge and technologies.

THREE *Conserving Biodiversity and Heritage*

A foundation for this Wise Use plan is the conservation of the biological and cultural heritage of the Coongie Lakes Ramsar Wetlands. Our management needs to protect the biological diversity and processes fundamental to maintaining ecological character and the cultural heritage of these wetlands. Our commitment to the conservation of the wetland and to Wise Use principles will also ensure the ecological sustainability of industry in the area. A basic level of monitoring of key wetland values is a prerequisite to realization of this commitment.

FOUR *Better Understanding*

The Coongie Lakes Ramsar Wetlands are ecologically, culturally and economically important wetlands nationally and internationally. Improving our understanding and monitoring of ecosystem processes, habitats and ecological responses to resource use is essential for maintaining the natural, cultural and economic values of the wetlands. Good information supports community understanding, and leads to well informed planning and development decisions about ecologically sustainable use of aquatic and land resources and the relationship between the two.

FIVE *Working Together*

The whole community has a stake in the condition and future management of the environment. Partnerships between government, industry and the local and wider community will help maintain the transparency of management processes, sharing of governance where appropriate, sharing of knowledge and data and effective coordination and integration of activities, in the Coongie Lakes Ramsar Wetlands. With the opportunity to have a say in the common property resources of the area comes responsibility, an openness to debate, recognition that there may be varying opinions and a collective duty of care.

DRAFT FOR COMMENT**Principles for Wise Use and Planning.**

The following principles are a foundation of this plan and should act as a guide to the development of subsequent action plans.

<i>Biological Diversity</i>	Biodiversity and ecological processes provide critical services for quality of life and must be protected and maintained.
<i>Existence Value</i>	Living organisms, earth processes and ecosystems may have value beyond the social, economic or cultural values held by humans.
<i>Uncertainty Principle</i>	Our knowledge of natural heritage and the processes affecting it is incomplete, and the full potential significance or value of natural heritage remains unknown because of this uncertain state of knowledge.
<i>Wise Use</i>	The use of natural resources must be compatible with Wise Use.
<i>Common Resource</i>	The Coongie Lakes Ramsar Wetlands are a common resource that has environmental, economic, cultural, scientific and recreation attributes.
<i>Aboriginal People</i>	Aboriginal people have sites of significance in, and rights of access to these areas.
<i>Inter-generational Equity</i>	The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.
<i>Rights of Tenure</i>	Various tenures issued by the Government of South Australia provide to the holders of those tenures rights of use and set conditions for such use.
<i>Compensation</i>	Holders of tenures are entitled to full and fair compensation for loss of tenure rights or expenses associated with implementing management requirements beyond that required by these tenures.
<i>Co-operation</i>	While the South Australian and Commonwealth Governments have clear responsibility for the management and conservation of the wetlands, the cooperation and participation of the Queensland Government, resource users, indigenous peoples, conservation groups and the local and wider community is critical to wellbeing of these wetlands.
<i>Catchment Management</i>	Total catchment management is necessary to conserve the environmental, economic, cultural, scientific and recreational values of the wetlands.
<i>Decision Making</i>	Effective decision-making requires transparent processes and integration of both long and short-term economic, environmental, and social and equity considerations; and the sharing and use of best available scientific information.
<i>Adaptive Management</i>	Management should be based around the development of evolutionary and innovative management policies that respond to the understandings gained from manipulative and experimental environmental and resource research conducted at relevant landscape scales.
<i>Precautionary Principle</i>	Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

8 RESPONSIBILITY AND CARE

**Wetlands constitute a resource
of great economic, cultural, scientific and recreational value to human
life;
wetlands and people are ultimately interdependent.**

Community

Developing and implementing public policies is invariably enhanced by community consultation and commitment. There are several communities with interests in the area. There is the local community; those who live, work and invest their livelihoods in the area. The local community has obligations to the well-being of the environment and each other, and is involved in the various local self-management committees which provide local empowerment.

The wider community consists of people who may live external to the area but who visit, conduct business or hold an interest in the features, values and well-being of the Coongie Lakes Ramsar Wetlands environment. This wider community includes scientists, conservationists and outback travellers who take a strong interest in the well-being of the area and their interest has been instrumental in achieving the current level of recognition and formal conservation status of the wetlands. The wider community contributes towards the Wise Use of the area, its conservation, monitoring and information collection, information dissemination, discussion about the regions wellbeing, and is actively involved in appropriate planning processes.

There is a need for all interests to both recognize and respect each others stake in the region.

<p>Community based groups that influence integrated management within the Coongie Lakes Ramsar Wetlands</p> <p>Australian Conservation Foundation Conservation Council of South Australia Cooper Creek Catchment Committee (a cross-border community integrated catchment management committee) Great Artesian Basin Consultative Council (Advisory council to State and Commonwealth governments on issues relating to and the management of Great Artesian Basin water.) Far Northern Consultative Committee (Advisory Committee to Minister for Environment and Heritage) Innamincka Progress Association Lake Eyre Basin Coordinating Group (peak coordinating group for integrated catchment management committees in the Lake Eyre Basin) Nature Conservation Society North-East Lands Aboriginal Corporation South Australian Association of Four Wheel Drive Clubs South Australian Recreational Fishing Advisory Council The Wilderness Society</p>

Industry

This plan for Wise Use recognises industry's role in the use of the Coongie Lakes Ramsar Wetlands area to generate wealth and employment opportunities. Petroleum exploration and production, tourism and recreation, pastoralism and fishing are part of the fabric of the region and have made significant economic and social investments in the area. These industries hold extensive access and use rights within the Coongie Lakes Ramsar Wetlands through tenures issued by the State Government. These tenures also specify conditions of use that include requirements to maintain the renewable resources and yield in the case of pastoralism and fishing, and to avoid or minimise any adverse impact on the environment in the case of petroleum operations.

Industry based groups that influence
integrated management within the Coongie Lakes Ramsar Wetlands.

Cooper Basin Joint Venture (oil and gas producers)

Environmental Review Group (Review of codes of environmental practice and exploration and production applications in the Cooper Basin)

Flinders Ranges and Outback South Australia Tourism Committee

Inland Fisheries Management Committee (advises and makes recommendations to the Minister and or Director Fisheries on the Fisheries Act, regulations and administration of the Act and other matters)

South Australian Chamber of Mines and Energy

South Australian Farmers Federation

South Australian Fishing Industry Council

Petroleum and mining companies which may be granted tenements

Governments

The local and international significance of the Coongie Lakes Ramsar Wetlands and the extent of community interest in the area affect a continuing policy setting and management role for both State and Commonwealth governments.

South Australian Government has made laws, administrative arrangements and pursued research and development programs affecting management of the Coongie Lakes Ramsar Wetlands. Particularly relevant are the various statutory bodies that promote community and industry decision making and action to meet government, industry and community objectives. This plan for Wise Use aims to integrate those diverse and in some instances, complex arrangements to provide a strategic approach and clearer outcomes for government, industry, sector groups and community in the Wise Use of the Coongie Lakes Ramsar Wetlands.

The goal of the wetlands policy of the Commonwealth of Australia is to conserve, repair and manage wetlands wisely.

The Commonwealth is a Contracting Party to the Ramsar Convention on Wetlands which provides a framework for cooperative intergovernmental action at the global level to stem the progressive encroachment on and loss of wetlands and take measures for Wise Use of wetland resources.

The policy of the South Australian Government provide that the Coongie Lakes Ramsar Wetlands, as part of the Lake Eyre Basin is an area of great environmental and economic significance to South Australia.

The South Australian Government¹⁰ will:

- ensure that the Basin's value as an aquatic system is enhanced,
- ensure full protection of the Coongie Lakes region,
- seek active cooperation with other States and the Northern Territory in the total catchment management of the Lake Eyre Basin,
- ensure the long term future of the Lake Eyre Basin by continuing to work with the Queensland and Commonwealth governments to ensure that the provisions of the Heads of Agreement in relation to management of the Lake Eyre Basin are worked through to develop legislatively binding integrated catchment management and water resources management regimes.

Statutory Bodies that influence integrated management within the Coongie Lakes Ramsar Wetlands.
Arid Areas Water Resources Committee
Native Vegetation Council (implementation of the <i>Native Vegetation Act</i>)
Pastoral Board (implementation of the <i>Pastoral Land Management and Conservation Act</i>)
Soil Conservation Council of South Australia and the Marree Soil Conservation Board (implementation of the <i>Soil Conservation and Land Care Act</i>)
South Australian National Parks and Wildlife Council
State Aboriginal Heritage Committee
State Heritage Authority
Tourism South Australia

DRAFT FOR COMMENT**International Treaties, State and Commonwealth Policies and Legislation**

that influence how obligations are managed in the Coongie Lakes Ramsar Wetlands.

SOUTH AUSTRALIAN GOVERNMENT

Policy of the Liberal Party of SA – Focus on our Environment and Natural Resources
Tourism South Australia-Environmental Code of Practice

Aboriginal Heritage Act, 1988
Animal and Plant Protection (Agricultural and other Purposes) Act, 1986
Development Act 1993
Environmental Protection Act 1988
Cooper Basin (Ratification) Act, 1975
Fisheries Act 1982
Heritage Act, 1993
Mining Act 1971
National Parks and Wildlife Act, 1972
Native Title (SA) Act, 1994
Native Vegetation Act, 1991
Pastoral Land Management and Conservation Act, 1989
Petroleum Act, 1940
Soil Conservation and Land Care Act, 1989
Water Resources Act 1997
Wilderness Protection Act, 1992

COMMONWEALTH GOVERNMENT

Inter-governmental Agreement on the Environment
National Water Reform Agreement - Council of Australian Governments
Wetlands Policy of the Commonwealth of Australia 1997
National Strategy for Ecologically Sustainable Development
National Strategy for the Conservation of Australia's Biodiversity
National Principles for the Provision of Water for Ecosystems
National Water Quality Management Strategy
National Weeds Strategy
National Eco-tourism Strategy
Aboriginal and Torres Strait Islander Heritage Act 1984
Australian Heritage Commission Act, 1975
Endangered Species Protection Act 1992
Native Title Act 1993
Racial Discrimination Act 1975

INTERNATIONAL AGREEMENTS

Agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds in their Environment (CAMBA)
Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds and Birds in Danger of Extinction and their Habitats (JAMBA)
Convention on Wetlands of International Significance Especially as Waterfowl Habitat (Ramsar Convention)
Charter for the Conservation of Places of Cultural Significance (Burra Charter)
Convention on Biological Diversity
Conservation of Migratory Species of Wild Animals (Bonn Convention)
Convention on International Trade in Endangered Species of flora and fauna (CITES)
Rio Declaration on Environment and Development
International Covenant on Civil and Political Rights
International Covenant on Economic, Social and Cultural Rights

9 VALUING THE COONGIE LAKES Ramsar WETLANDS

Significance, Benefits, Uses and Values

The Coongie Lakes Ramsar Wetlands region contributes to South Australia's biodiversity and geodiversity, environmental quality, social and cultural life, and economic wealth. The significance, benefits and values ascribed to these wetlands are many and varied. They include biodiversity, geodiversity, cultural heritage and petroleum industry and products, recreation opportunities, tourism industry, pastoral industry and beef production, commercial and recreational fishery, intrinsic, bequest and aesthetic values.

Natural Significance means the importance of ecosystems, biological diversity and geodiversity for their existence value, or for present or future generations in terms of their scientific, social, aesthetic and life-support value¹¹.

Benefits means characteristics both singly or in combination, that give rise to benefits. Benefits may be functions, uses or attributes¹².

Values are the perceived benefits to society, either direct or indirect, that result from wetland functions. These values include human welfare, environmental quality and wildlife support¹³.

SIGNIFICANCE

This is based upon the ecological character of the wetlands.

Biodiversity

The lower Cooper Creek floodout and Coongie Lakes are near natural wetlands within the Channel Country Biogeographic Region and play a substantial role in the ecological and hydrological functioning of the Cooper Creek Basin. The variability of flows, rainfall and the complex floodplain landscape give rise to a great variety of floodplain and aquatic habitats. Sixty wetland habitats based on the levels and frequency of inundation, soil types and vegetation species and structure have been described within the Cooper System¹⁴. The aquatic habitats of these wetlands are also diverse both spatially and temporally.

Biodiversity means the variety of life forms: the different plants, animals and microorganisms, the genes they contain and the ecosystems they are part of¹¹.

Geodiversity means the range of earth features, systems and processes. These include geological, hydrological, soil, geomorphological and atmospheric features, systems and earth processes¹¹.

Species biodiversity of the Coongie Lakes Ramsar Wetlands is outlined in the following pages, with more detailed information provided in the Ramsar Information Sheet (see Appendix B).

Mammals: An isolated population of the water rat occurs in the Cooper Channel and some of the lakes and swamps of the Coongie system.

The process of evolution means that the pool of living diversity is dynamic: it increases when new genetic variation is produced, a new species is created or a novel ecosystem formed; it decreases when the genetic variation within a species

Birds: Seventy-four waterbird species and 13 other wetland dependant species have been recorded within the Coongie Lakes Ramsar Wetlands Ramsar area. Forty-five waterbird and a further 10 wetland dependant species are known to breed in the area. Twenty-six species of waterbird occurring in the area are listed under treaties, 17 species are migratory and 2 vagrant. Fourteen species are listed as rare, endangered, or vulnerable in South Australia. Large congregations of waterbirds on the lakes occur, for example 35 000 ducks in 1987, and a breeding colony of more than 50 000

Australian Pelicans in 1992. A conservative estimate¹⁵ of 250 000 waterbirds was recorded for the central wetlands for November 1997. It is considered likely that total waterbird abundance may exceed 500 000 at times during big flood events such as 1974-76 and 1989-91, but this is dependent on external factors like rainfall and flooding elsewhere in inland Australia.

Raptors The Cooper and Strzelecki Creeks support a major assemblage of raptors in Australia consisting of 18 species, of which 16 breed locally.

Fish The fish community of the Coongie Lakes region includes 12 native fish, two of which are endemic to the Cooper Catchment: the Lake Eyre callop and the Cooper Creek catfish.

Amphibians Ten frog species have been recorded in the area, a rich frog community for central Australia.

Reptiles The wetland contains a morphologically distinct form of the freshwater turtle. The red naped snake, woma python and black-headed goanna all have an uncertain abundance and small or sparse range that includes the Coongie Lakes Ramsar Wetlands.

Macroinvertebrates Studies¹⁶ show that many of the taxa found within the Cooper/Coongie system are also found elsewhere (Diamantina River and Murray-Darling Basin), but the Cooper/Coongie system shows a high level of within-site diversity which is not apparent in the more developed catchments of the Murray-Darling Basin^{17b&c}. Molluscs are abundant and widespread, with *Velesunio wilsonii* ubiquitous on the more frequently inundated waters and a variety of gastropods - particularly *Austropeplea lessoni*, *Glyptophysa gibbosa* and *Notopala sublineata* - form a significant biomass in the highly vegetated littoral zones. These populations of gastropods are significant as comparable populations in the heavily developed Murray-Darling Basin are severely threatened if not extinct^{17a}. This makes the rivers of the Lake Eyre region the last refuge for many of these large river gastropod taxa. *Gabbia australis* seems to be characteristic of ephemeral water bodies. The composition of the fauna appears to vary with duration of inundation and on lotic-lentic axis, distinguishing channel and lake habitats¹⁶.

Flora Approximately 350 species of plant have been identified from the Coongie Lakes area¹⁸ including 4 species listed as rare (r) or endangered.(e) at the State (S) or National (N) level. These are *Osteocarpum pentapterum* (Se), *Frankenia cupularis* (Sr, Nr), *Echinochloa inundata* (Sr), and *Goodenia lobata* (Sr, Nr).

The apparent small number of threatened species is likely to reflect our lack of knowledge about the distribution and abundance of the rarer species in the region.

Habitats

Riparian The river red gum dominated riparian woodlands occur as a narrow strand along the banks of the Kudriemitchie and Tirrawarra Waterholes. The vegetation is floristically and structurally more diverse than the coolibah riparian woodland of the lakes and inter-lake channels. Some of the smaller tree species that occur in these riparian woodland

decreases, a species becomes extinct or an ecosystem complex is lost. The concept emphasizes the interrelated nature of the living world and its processes¹⁹.

Lotic – relating to actively flowing water such as currents.

Lentic – relating to slow moving or stagnant water such as lakes or swamps.

Riparian – pertaining to watercourse and including the watercourse its banks and alluvial plains.

communities are Queensland bean-tree, Broughton willow, river coobah, plum bush and the occasional stand of sour plum¹⁸.

Open to sparse coolibah woodlands are scattered through the district's floodplain environment, often associated with dry lake beds, or marking previous high water levels around the outer margins of floodplains. These support a relatively rich bird community although densities are much lower than for the riparian woodlands¹⁸.

Lignum occurs as shrublands, sometimes co-dominant with Queensland bluebush, and/or as a shrub layer under a woodland canopy. This habitat also supports a suite of terrestrial animals and birds and is refugial habitat for the 'plague' long-haired rat *Rattus villosissimus*¹⁸. The Lake Eyre Callop is known to breed in Tirrawarra Swamp an intricate network of steep-sided channels lined with coolibah and lignum²⁰.

Most of the floodplain carries sparse, low vegetation of variable composition, dominated by ephemeral or short-lived perennial species. Cover and species composition change through the year and between years, with heavy rains producing a spurt of dense growth, the composition of which is determined by the season in which the rain falls¹⁸.

An important and distinctive habitat in the district's range of floodplain environments is the densely vegetated normally dry lake-bed. Lake Apachirie, immediately west of Lake Coongie is a good example. These lakes receive water from the Cooper Creek only occasionally and are characterised by rich, friable, deeply cracking clays. ¹⁸.

Dune field habitats can be divided into two forms, Kertitoonga Land System and Strzelecki Land System (see Figure 2). Kertitoonga Land System consists of red dune fields with semi mobile crests in places and a perennial cover of sandhill canegrass and lobed spinifex; interdune swamps contain starbush, blackbush and neverfail. Interdune drainage and lakes are ephemeral, lakes support coolibah over samphire or lignum shrubland.

The Strzelecki land system describes the dunefields of the Strzelecki Desert in the south-east of the Ramsar site. The desert consists of red dunes which support scattered low trees and shrubs including whitewood, mulga and sandhill wattle over sandhill canegrass and lobed spinifex. Sandy interdune flats support low trees including colony wattle and straggly corkbark with a ground cover of copperburrs and annual grasses. Clay interdune swales support Mitchell grass, neverfail and plate grass.

Gibber Plains The Koonchera land system occurs in the north of the Ramsar site (see Figure 2). It consists of gently undulating gibber plains crossed by major drainage and run-on depressions and swamps and limited occurrences of red dunes. The gibber plains support vegetation dominated by Mitchell grass, katoora and bladder saltbush; run-on depressions and swamps are vegetated with Queensland bluebush, cottonbush, canegrass and neverfail; creek channels are lined with coolibah, plum bush, river emubush and river cooba and long red sand dunes are dominated by sandhill canegrass.

Gibber plains – plains with a covering of desert varnished stone.

Refugia

The Coongie Lakes Ramsar Wetlands has been identified as a highly significant refuge. The wetland system provides habitat for an extensive range of plants and vertebrate and invertebrate animals, both aquatic and terrestrial, in an otherwise arid and waterless environment²¹.

The diversity and changeability of habitat has resulted in a moderately rich aquatic biota characterised by spectacular fluctuations in abundance, high dispersal and colonising capabilities, tolerance of extreme conditions and flexible opportunistic life histories²².

The Coongie Lakes region supports a highly diverse and at times abundant bird population. With over 205 species reliably recorded, the region may have a higher bird species diversity than any other truly arid region in Australia²².

Flooding is the most crucial factor in shaping the life-history patterns of aquatic biota in the region. Waterbirds move between the lakes to capitalise on habitats that suit their dietary needs, foraging methods or reproductive condition that change as the lakes fill and recede. The fish populations of the system also respond to flooding in various ways. Juveniles undertake downstream colonising migrations, and adults of most species spawn during floods, some such as the Lake Eyre Gallop, after upstream migration to breed in the lignum swamps. The breeding behaviours of most species are more flexible, however, than their southern Australian counterparts. The highly variable flooding regime also enables adaptations to drier conditions. Crustaceans such as the shield shrimp, the clam shrimps and the fairy shrimps hatch from drought resistant eggs and live through an accelerated life cycle. The inland crab and the burrowing frog survive long droughts by sealing themselves in burrows²².

Ecological Integrity

The integrity of the natural functioning of the Cooper Creek system has intrinsic value.

The flora and fauna of the area are believed to be largely unaltered. However all but one of the original medium sized native mammals (about ten species) are extinct at the site. Without an adequate benchmark it cannot be verified, but it is believed that many changes to the abundance and dynamics of individual species' populations and the communities they form have occurred historically, largely as a result of introduced grazing animals²³.

Relatively few (6%) alien plant species occur in the Coongie Lakes Wetlands³⁴. There are some weed problems in the area for example Mexican poppy and couch grass.

The fish fauna of the wetland is largely unaltered in its ecology and population structure. There are at least two exotic fishes in the site, the gold fish and the plague minnow (and perhaps the Murray Cod) although

***Refuge* – a region in which certain organisms survive during a period in which most of their original geographic range becomes uninhabitable. Thus, species may retreat to refugia because of climatic change, unsuitable climatic or ecological conditions such as drought or flood, or because of environmental changes set in train by human occupation²¹.**

***Ecological integrity* – the general health and resilience of natural life-support systems, including their ability to assimilate wastes and withstand stresses such as climate change and ozone depletion ²⁴.**

the native fishes are numerically dominant.

Introduced and feral terrestrial animal species in the wetland area include rabbits, pigs, wild horses, donkeys, camels, house mice, house sparrows, common starlings, foxes and cats. Introduced animals of course include the cattle and horses of the pastoral livestock industry.

Hydrological Diversity

The variety and significance of the geological and hydrological features and processes are derived from the arid and variable nature of the Cooper system. The Cooper Creek and Coongie Lakes form a complex mosaic of lakes, channels, internal deltas and interdune floodouts providing a great variety of habitats. It is also a relatively unaltered and unpolluted catchment with natural flows.

The Lake Eyre Basin, of which the Cooper is a major catchment, is the best example of, and one of the largest endorheic regions in the world²⁵. The Cooper Creek and Coongie Lakes are unusual in their entirely arid and semi-arid catchment, in their endorheism, in their exceptionally variable hydrology, the occurrence of numerous disjunctions and their termination in a large saline playas, Lakes Eyre and Blanche^{26, 27}. It is a typical example of an influent or losing river system, where water just ceases to flow, reaching neither a playa nor the sea.

The Lower Cooper floodout and Coongie Lakes are a near-natural wetland within the Channel Country Biogeographic Region²⁸. Compared with other wetlands of the Channel Country Biogeographical Region the Cooper Creek and Coongie Lakes system is located in a more arid region and is geomorphically different. The Coongie Lakes are also less regularly filled and are much more extensive than the lakes of the Paroo, Diamantina and Darling systems.

The climate of the region is arid to semi-arid, and the distribution of rainfall is exceptionally variable, both spatially and temporally. The variability of rainfall in the Cooper Creek catchment in turn gives rise to very high hydrological variability over very long time scales and results in erratic alternations of wetland flooding and drying. The large size of the catchment and the low gradient and relief give rise to extensive floodplains over which alternate flooding and drying occur.

The interaction between the surrounding dunefields, the highly variable flows of the Cooper Creek and the highly variable local rainfall produces a complex floodplain landscape with varying frequency, timing and duration of inundation, flow rates, balance of rainfall and river inputs, shoreline development, vegetation density and structure, and water chemistry. There are deep permanent river channel reaches, freshwater and saline lakes, internal deltas, swamps, braided channel systems, flooded woodlands and grasslands and samphire claypans. The intricacy of inundation pattern together with the dune topography provides for a high degree of landscape patchiness and density of edge effects or riparian ecotones that contribute to the diversity of habitat. The innumerable flow ponding areas provided by this landscape are likely to act as nutrient traps and therefore as sites of high productivity and as drought refugia²⁹.

As with biodiversity, there is a need to develop accurate models of the

Geodiversity – the range of earth features, systems and processes. These include geological, hydrological, soil, geomorphological and atmospheric features, systems and earth processes¹¹.

Endorheic/endorheism – draining to an inland water body, in this case Lake Eyre.

Influent or losing streams – streams or reaches of a river in which there is a net loss of surface water from the system due to evaporation or soakage.

Biogeographic regionalisation – an ecologically meaningful regionalisation which defines the major ecosystems of Australia⁹.

Wetlands – areas of marsh, fen, peatland, or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh or brackish or salt, including areas of marine water the depth of which at low tides does not exceed six metres. Wetlands may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than

hydrology, particularly with respect to filling sequences, lateral spread and flood depth of the site's numerous lakes, other wetlands and floodplains. The model that is eventually developed needs to be sensitively calibrated to the many rainfall gauging stations and the few flow and height gauging stations available throughout the Cooper Catchment. Such accurate modelling and predictive forecasting capabilities will be a prerequisite to sound conservation management and wise use.

six metres as low tide lying within the wetlands³⁰.

BENEFITS

Benefits provided by the biodiversity of the wetland are various. Identified benefits are listed below in three groups: ecosystem services, biological resources and social benefits.

Benefits may be either functions, products, uses or attributes¹².

Ecosystem functions and processes include water purification by wetland processes, flood mitigation, soil formation processes, nutrient storage and cycling, pollution breakdown and absorption.

Functions are activities or actions which occur naturally in wetlands as a product of the interactions between the ecosystem structure and processes¹³.

Ecosystem functions and processes identified as valuable by the community are:

- flooding of the wetland provides water and nutrient inputs that result in the phenomenal breeding and migratory events of invertebrates, fish and waterbirds
- receding water levels after flooding and high flows promote the growth of highly nutrient native pastures
- permanent and near permanent high quality water resources
- drought refugia for biota in the arid zone.

Processes are changes or reactions which occur naturally within wetland ecosystems. They may be physical, chemical or biological¹³.

Biological resources (products) include high quality water used for both domestic and stock water, fish harvested by recreational fishers and by one opportunistic commercial fishery, firewood utilised by locals and visitors, pastures utilised for livestock production and timber products harvested for traditional uses by Aboriginal people.

Products are generated by the interactions between the biological, chemical and physical components of a wetland. They include wildlife resources, fisheries, woodland resources, agricultural resources and water supply¹³.

The biodiversity of the area may also yield medicinal resources in the future. In the future, other resources are likely to be discovered as knowledge improves.

Biological diversity is an intrinsic part of the value of the wetland for tourism and recreation purposes. The cultural value of biological diversity for present and future generations is an important reason for conserving it today. The natural environment provides for many of the inspirational, aesthetic, spiritual and educational needs of people.

The many values of biological diversity and its importance for development differ from traditional nature conservation. Biological diversity conservation entails a shift from a reactive posture – protecting nature from the impacts of development – to a proactive effort to meet

Attributes – characteristics or combinations of characteristics which do not necessarily provide a function or support a use, but which are valued by a

peoples' needs from biological resources while ensuring the long-term ecological sustainability of Earth's biotic wealth³¹.

Social Benefits (attributes) such as research, education and monitoring. There is still much to learn about how to get better use from biological resources, how to maintain the genetic base of harvested biological resources and how to rehabilitate degraded ecosystems. Natural areas provide excellent living laboratories for such studies, for comparison with other areas under different systems of use and for valuable research into ecology and evolution. Unaltered habitats are often essential for certain research approaches, providing controls against which the changes brought about by different management regimes may be measured and addressed.

The Coongie Lakes Ramsar Wetlands sustains a poorly understood biota. Knowledge of the functioning of this large and mostly unregulated catchment may help repair and better manage highly modified and degraded catchments such as the Murray-Darling Basin.

group within society. They may lead to certain uses or the derivation of particular products, and may have intrinsic, unquantifiable importance. Attributes include biological diversity and unique cultural heritage features^{12,13}.

Natural Capital – the stock of productive soil, fresh water, clean air, vegetation and other renewable resources that underpin the survival, health and prosperity of human communities³².

NATURAL RESOURCE USE

Petroleum industry and products

The Coongie Lakes Wetlands partly overlies the Cooper Basin, which is the most significant, wholly onshore, petroleum (oil and gas) resource in Australia. It is estimated that the Coongie Lakes Wetlands Ramsar area covers 30% of the known resources within the South Australian portion of the Cooper Basin. The oil and gas resources from this region provide the raw material for petroleum products for manufacturing and are of strategic importance to South Australia and New South Wales.

The economic wealth generated by these petroleum resources for 1996 were (in 1996 A\$):

Exploration expenditure	\$ 21	million
Development capital expenditure	\$100	million
Revenue	\$196	million
Royalties	\$ 13	million.
Additional household income	\$ 7.6	million
Value adding impact	\$ 20	million
Directly supported jobs	274	FTE
Additional indirect jobs	357	FTE

Future prospects for petroleum exploration and production activity in the region depends on the life of the wells currently known or in production, and the potential to find and exploit new resources. With considerable expenditure on exploration and new technologies and geoscientific understanding of the area, the likelihood of further significant discoveries remains high. It is estimated that undiscovered reserves of 60 to 1100 petajoules of Sales Gas and 800 to 6300 megalitres of oil may still occur within the Ramsar area.

There is moreover yet untapped potential to exploit other energy resources in the region. These include in-situ coal gasification and geothermal energy.

The petroleum industry contributes to the fabric of the region through the maintenance and building of new roads and tracks, provision of access to medical services and support for other land users, social facilities and activities³³.

Mineral Industry

Borrow pits for extraction of soil for road construction is currently the only mineral extraction activity in the region. The potential of the area for mineral exploration is unknown although some interest in exploration has been recently expressed by mineral exploration companies.

Recreation and Tourism

The Coongie Lakes Ramsar Wetlands is a tourist destination for an increasing number of visitors. Visitor numbers fluctuate with season and have increased from approximately 5 000 in 1985 to 16 000 visitor nights in 1986 and 25 000 visitor nights in 1987³⁴. An estimate derived from recent

Petajoule – a unit of energy. The energy demand for South Australia in 1996 was 80 petajoules.

visitor counts conducted by the National Parks and Wildlife South Australia put visitor nights at Cooper Creek in Innamincka Regional Reserve at between 30 000 and 50 000. The increase in visitor numbers is attributed in part to media coverage and in part to improvements to road access to the area.

Visitors are generally seeking a remote outback and 'soft' adventure experience. Many people are attracted by the wide-open spaces and the beauty of the landscape that includes dunes, great expanses of water in the lakes, and tree-lined waterholes and creeks.

The wetlands provide a variety of recreational opportunities. The diverse bird life attracts the interest of bird watchers, recreational fishing is rewarding and passive water sports including swimming and canoeing are refreshing in the otherwise arid landscape and sites of historic significance provide a focus for the visitor.

The Australian Inland Mission building opened in 1929 provided a medical service to the community until 1951. This building, a ruin for over 40 years was reopened in 1994 as the National Parks and Wildlife SA office, visitor interpretation centre and staff accommodation.

The benefits to the local and wider community of recreation and tourism include:

- opportunities to experience the wetlands and the diversity of wildlife
- space for people to relax contributing to the physical and spiritual health of the community
- opportunities for social activities such as the Innamincka Races
- income to the region based upon average visitor numbers of 15,000 per annum was estimated to be \$7.5 million per annum³⁶
- provision of jobs for about 30 local people per annum³⁶
- opportunities for business, including services such as food and accommodation, vehicle repairs and tours including fly-in, fly-out tours, cruises, and tag-a-long tours³⁶.

Pastoral livestock industry and products

The Coongie Lakes and Cooper Creek waterholes provide domestic and stock water and extensive areas of naturally irrigated native pasture that is the basis of the pastoral industry in the area. The high quality of the floodplain pastures allows the production of premium, chemical-free beef, which sells on both the Australian and international markets.

Income and employment benefits derived from pastoralism within the Coongie Lakes Ramsar site are difficult to estimate since the site boundaries do not accord with the boundaries of pastoral leases. The profile of such benefits published for the Innamincka pastoral enterprise³⁵ ³⁶ can however be extrapolated to the larger area of the Coongie Lakes Ramsar Wetlands site as a guide. At a district average stocking rate of 0.8 cattle per square kilometre, the Coongie Lakes Wetlands Ramsar area are estimated to support 16 000 cattle, average an annual \$2.8 million in gross cash receipts and employ 20 people. Spending on goods and services of \$1.3 million annually supports a range of businesses and other service providers in the wider region. Approximately \$450 000 is paid annually to the Commonwealth and State Governments in taxes and charges. These figures do not include any multiplier effect or pastoral production outside the boundaries of the Coongie Lakes Wetlands Ramsar site.

The pastoral occupation of this vast landscape provides additional benefits to the community. Pastoral people provide the core management support for the area; control of feral animals, off-road vehicle use, community and traveller safety, policing illegal activities including the taking of wildlife, and provide a base for research and monitoring in the region. The local community also organises and supports a range of social and community structures and functions such as the Innamincka Picnic Races and the Royal Flying Doctor Service. Much Australian folklore is also attached to pastoral activities in the region.

Recreational and Commercial Fishery

The Cooper Creek system is a well known and popular recreational fishing destination. Improvements to roads and visitor facilities at Innamincka and tracks around the waterways have increased to potential for recreational fishing in the area. There are no figures available for the current or historical levels of recreational involvement or the economic value of this fishery but a large percentage of visitors to the area are thought to undertake recreational fishing. It is known that approximately 3% of South Australia's 453,000 anglers fish regularly in freshwaters other than the River Murray ³⁷. It could be deduced that much of this effort is directed at the Cooper Creek given the scarcity of freshwater fishing opportunities in the State. Anecdotal evidence indicates that the recreational fishing effort is concentrated over the school holidays.

Anecdotal evidence also indicates that the main recreational target finfish species is Lake Eyre Callop (undescribed species *Maquaria* sp B). Other species including catfish (Family Plotosidae) and grunters (Family

Teraponidae) are also taken. It is thought that yabbies are also a major recreational species in the system.

In 1992 a miscellaneous fishery licence for the harvest of Lake Eyre callop (*Maquaria sp B*) was issued to the holder of Mulka Station. This is the only commercial fishing licence in the South Australian portion of the Cooper Creek system and permits fishing activity to occur only in the waters of the Mulka Pastoral Leases (See Figure ?? map).

When the fishery is operating, fish are mostly taken from Lake Pando Penunie (formerly Lake Hope) and Red Lake. These rarely filled ephemeral lakes of the lower Cooper Creek have a flood frequency of 1 in 31 years. During periods of flood the lakes are restocked with aquatic species from deep, virtually permanent waterholes further up the Cooper system. When dry the aquatic species become locally extinct.

The lakes on Mulka Pastoral Lease were successively filled by floodwaters from three flood events between 1989 and 1991 following which the lake was isolated from the remainder of the Cooper system.

When the fishery was operating (May 1992 until March 1994) the licence holder harvested 309 tonnes of Lake Eyre Callop from Red Lake and Lake Pando-Penunie (L. Hope). A consultant studying the fishery estimated this as 4% of the biomass of Lake Eyre Callop in the isolated lakes³⁸.

Economic information for the commercial fishing operation has not been assessed and the indirect financial benefits through research, processing, transport, and sales industries have not been calculated. During the periods of fishing activity, several people are directly employed.

VALUES

Heritage and Cultural Values

The Yandruwandha, Yauraworka, Dieri, Wangkangurru and Wangkumara Aboriginal groups have an association with the wetlands contained within the Coongie Lakes Ramsar Wetlands area. Their contemporary association is reflected in the three Native Title claims over parts of the area.

Early historic accounts indicate that the region was densely settled. The banks of Cooper Creek are described as lined with huts, graves and well-trodden paths with permanent camps established at the more reliable waterholes. People moved up and down the creek channels and between lakes during flood cycles, exploiting the abundant resources of the wetlands. Fish, turtles, waterbirds, mussels and frogs were all eaten together with a range of marsupials and reptiles. Nets and weirs were used to trap fish, yabbies and waterbirds. Plant foods, particularly the seeds from grasses, acacia and nardoo were collected from the floodplains and were ground to a paste using grindstones available from local quarries³⁹.

The first European in the area was the explorer Captain Charles Sturt in 1845, at the time Surveyor-General of South Australia. Sturt ventured up the Strzelecki Creek, which he named after the Polish explorer, and beyond to the Stony Desert, and the Cooper, a 'magnificent channel covered with waterfowl'. He named it after Charles Cooper, later South Australia's first Chief Justice.

Cooper Creek became well known to the colonies in 1861. It was here that Howitt discovered the bodies of the missing explorers Burke and Wills after their ill-fated expedition to the Gulf of Carpentaria. Howitt marked the places where he buried Burke and Wills by blazing nearby trees. Another search party, led by John McKinlay from Adelaide, discovered non-aboriginal human remains at Lake Massacre, north of the Cooper Creek area.

These explorers were quickly followed by the establishment of the pastoral industry, and then by service industries and the settlement of Innamincka.

The first pastoral enterprises in the area were established in 1873 and the long and dramatic pastoral history of the area, recorded in art, poetry and history, forms a significant part of the cultural heritage of the region and Australia.

The settlement of Innamincka was surveyed as a town in 1890. The township at the time consisted of a hotel, store, police station, blacksmith and later Australian Inland Mission (AIM) Nursing Home. The town provided services and supplies to the local population and droving teams travelling with stock from the north to southern railheads at Farina and Marree in South Australia. During this period, alienation from land and resources, and the availability of Government rations, led Aboriginal people to congregate in large camps around the township of Innamincka.

However, following droughts and floods in 1949-50, the township was abandoned. The AIM Nursing Home closed in 1952, followed by the closure of the police station. Innamincka township was deserted until 1971 when an aluminium-cladding store and hotel were erected near the ruin of the nursing home. Subsequently an increasing number of tourists, many of

Cultural significance means aesthetic, historic, scientific, or social value for past, present or future generations⁴¹.

Cultural Heritage – sites important in demonstrating the principal characteristics of the range of human activities in the Australian Environment including way of life, custom, process, land use, function, design, technique.

whom are interested in the area's links to the Burke and Wills expedition of 1860-61, started to visit the area⁴⁰. The annual Innamincka picnic race meeting has become a South Australian 'bush icon' and is attended by local people and many visitors.

Listed Cultural Sites The Innamincka township area has a known collection of sites including, campsites, mythological/ceremonial sites, quarries, as well as the burial sites many of which are important to surviving relatives. In 1991, an item called 'Innamincka Aboriginal Sites' was listed on the Register of the National Estate. This registration recognises that Innamincka was an important focus for Aboriginal settlement especially in historic times.

The *Aboriginal Heritage Act 1988* provides protection to Aboriginal sites, objects and remains that are of significance according to Aboriginal tradition or of significance to Aboriginal archaeology, anthropology or history. The Register lists 127 such sites for Innamincka Regional Reserve. Recorded categories include archaeological sites (occupation sites), burials, art sites, ritually significant locations, tool manufacturing sites, grindstone quarries, remains of wiltjas, early historic campsites, and stone arrangements. The majority of these sites were recorded between 1982 and 1986 and are near Innamincka and at Coongie Lakes. Several hundred more sites have been reported to the Division of State Aboriginal Affairs but these have not yet been assessed for addition to the Register.

Many sites and areas are significant according to criteria under the Australian Heritage Commission's Register of the National Estate and the Australian ICOMOS Charter for the Conservation of Places of Cultural Significance (Burra Charter).

The significance of the European settlement of the area is recorded on the State Heritage register (SH) and the National Estate (NE). The places listed are:

1. the former AIM Nursing Home in Innamincka township (SH, NE). This building was renovated as the Regional Reserve office and reopened in 1994.
2. Gray's Tree, Lake Massacre (SH, NE). This tree is believed to mark the site of the death and burial of Charles Gray on 17 April 1861. It is one of only two known and tangible pieces of evidence in South Australia of the Burke and Wills Expedition.
3. Innamincka Cooper Creek State Heritage Area (see Figure 3 page 42). Sites within this area related to the fate of Burke and Wills include:
 - Burke's Tree (SH, NE) near Innamincka marks the vicinity where Howitt found Burke's body buried. The body was later exhumed for a hero's burial in Melbourne in January 1863. Sand drift has covered the trunk of this tree bearing the large blaze.
 - The site of Wills' Tree (SH, NE) near which Wills died in a wurlie, and where King buried him with sand and rushes. Howitt's party collected the remains and interred them at this site. This tree does not appear to exist any longer.
 - A recently erected cairn, and tree blazed with King's name (a later event also) mark where King was discovered by Howitt (SH). This tree was broken and killed in a windstorm in 1987. The remains of the tree trunk were pieced together, mounted on a base, and reinstalled at the site in 1989.
 - The site of Howitt's camp (SH, NE) by Cullyamurra waterhole has

Wiltja – a shelter

National Estate – listing means that the place has heritage value of national, state or local significance.

been marked by a cairn erected on the basis of information from Howitt's Journal.

4. Innamincka Historic Reserve which includes Aboriginal rock engravings (NE), campsites and graves and the first gravesite of Burke.

Aesthetic Value

The area is highly regarded for its aesthetic value. It contains natural and cultural features and landscapes with outstanding scenic and evocative qualities and associated meanings. The area articulates an expression of the desert oasis aesthetic established in Australian art and literature. Visitors, spending upwards of 30 000 visitor nights a year, are attracted to this remote locality to experience its aesthetic appeal, unusual and rare landforms, biodiversity and important landmarks in Australia's exploration history and cultural identity. The beauty of this outback oasis attracts visitors to the area. Art and photography is an important part of the recreation experience with photographic works depicting these outback icons available as postcards, in calendars and as photographic essays and coffee table books. The Coongie Lakes have also provided the inspiration for landscape and spiritual paintings.

Aesthetic Value — is the response derived from the experience of the environment or of particular natural and cultural attributes within it. This response can be either to visual or non-visual elements and can embrace emotional response, sense of place, sound, smell and any other factors having a strong impact on human thoughts, feelings and attitudes⁴².

Existence and Bequest Values

The community has expressed a willingness to retain both existence and bequest values of this wetland. As discussed previously, the area is well regarded for its many intrinsic values and the numbers of visitors to the area reflects this.

The government and industry has recognised the wider community's interest by(see Figure 3 page 42) :--

- listing two (nested) areas on the Register of the National Estate
- State Heritage listing of the Cooper Creek,
- the proclamation of Innamincka Regional Reserve,
- special zoning of the Coongie Lakes Control Zone
- conservation (cattle exclusion)fencing of Cullyamurra Waterhole and portion of the Coongie Lakes complex..

The area also has bequest value to Pastoral Leaseholders of the area as inheritance for their children.

Existence and bequest values – non-use values, values not derived from use benefits but from the intrinsic nature of the place or thing.

Existence value – the welfare obtained from the knowledge that an environmental resource exists without necessarily having intentions to use the resource⁴³.

Bequest value – the willingness to retain something or place for the benefit of future generations⁴³.

10 THE WAY AHEAD

The way ahead for the Coongie Lakes Ramsar Wetlands has been largely defined by existing administrative structures. These structures, which are sectorial, with an added emphasis on integration and the provision of scientific and technical advice, can support adequate management and meet the Wise Use objectives of the Ramsar Convention.

This chapter identifies preferred outcomes and a range of actions for the way ahead to meet our commitments to the Coongie Lakes Ramsar Wetlands.

Naturally Flowing Cooper Creek

Current Situation

The Cooper Creek remains a largely unregulated watercourse system, typifying an arid internally draining and braided river where flows decline and diverge downstream. Natural flow regimes are inherently variable and support ecological communities and industries that are adapted to and dependent on variable flows. It is among a dwindling number of the world's rivers with near-natural flow regimes and substantially unaltered ecosystem processes.

The Government of Queensland has developed a draft water management plan for the water resources of the Cooper system upstream in Queensland⁴⁴. This plan proposes maximum harvest rates in excess of 400 000ML per annum – which approximates the median flow rate of the Cooper Creek into South Australia (see Appendix B, Annex A).

South Australia sources a significant amount of its water supply from the River Murray which also has its headwaters interstate. The excessive diversions from the Murray Darling system have resulted in growing and as yet unknown dimensions of land and water degradation which are managed by the cross jurisdictional forum, the Murray Darling Basin Commission. The Cooper system, on the other hand, being in a largely unmodified state, provides an opportunity to develop a best practice model for environmental and natural resource management for large river basins.

Imperative

To maintain the ecological character of the Cooper Creek and the Coongie Lakes Ramsar Wetlands, the flow regime into South Australia needs to be maintained in its current near natural and variable state.

There is overwhelming national and international evidence that excessive water resource development on rivers can severely impacts on dependant aquatic ecosystems such as terminal and lateral wetlands leading to loss of biological diversity and abundance⁴⁵.

The threat to the integrity of the wetland is not only about loss of water flows. The diversions of water in the upper reaches of the catchment are destined to lead to different and more intensive land uses. These in turn could lead to soil and water salinisation, the introduction of fertilizers and chemicals to the catchment and changed soil, vegetation and water catchment characteristics. There is a risk that these changes will impact downstream in the Coongie Lakes Ramsar Wetlands. The imperative therefore, is to establish a process for integrated catchment-wide planning and management of the Cooper System that recognises cross-jurisdictional issues.

Outcome

Continuation of the hydrological diversity of the Cooper Creek flowing into South Australia by ensuring water allocations that are consistent with the Heads of Agreement and the Council of Australian Governments Water Reform Framework.

Actions

- 1 Continue negotiations between the Queensland, South Australian and Commonwealth Governments to develop a cross border Agreement that provide a framework for managing cross-border water resource issues.
- 2 Pending finalization of the Agreement, request that the Queensland Government allocate no additional water from the Cooper Creek and insist that the catchment be managed within the spirit and intent of the 'Heads of Agreement in Relation to the Management of the Lake Eyre Basin' and other relevant strategies and agreements.
- 3 Continue input into Queensland's Water Management Plan for the Cooper Creek to ensure the maintenance of the existing hydrological character of the wetlands.
- 4 Establish appropriate ecological, hydrological and physical water quality benchmarks.

A naturally flowing Cooper Creek is essential
to the ecological integrity of the Coongie Lakes Wetlands

Wise Use

Wise Use of wetlands is their sustainable utilisation for the benefit of humankind in a way compatible with the maintenance of the natural properties of the ecosystem.

There are two main issues with regard to Wise Use in the Coongie Lakes Ramsar Wetlands:

Ramsar Site Boundary

Current Situation

The definition of the Coongie Lakes Wetlands Site in 1987 was only a broad indication of the general area and arguably, does not delineate all the wetlands that have Ramsar values, while including some non-wetland areas. Stakeholders and interest groups have expressed the view that the boundary of the Coongie Lakes Ramsar site should be redefined to better reflect the ecological character of the site.

The Articles of the Convention relating to boundary changes only address the case of urgent national interest: 'Any Contracting Party shall have the right...because of its urgent national interests, to delete or restrict the boundaries of wetlands already included by it on the List...' (Article 2.5). However the Convention provides no guidance on defining urgent national interest and there have been very few cases in the history of the Ramsar Convention where the boundaries of Ramsar sites have been deleted or restricted due to the Contracting Parties urgent national interest. Article 4.2 of the Ramsar Convention states that 'Where a Contracting Party in its urgent national interest, delete or restricts the boundaries of a wetland included in the List, it should as far as possible compensate for any loss of wetland resources, and in particular it should create additional nature reserves for waterfowl and for the protection, either in the same area or elsewhere, of an adequate portion of the original habitat'.

At the 7th Conference of the Contracting Parties to the Convention on Wetlands a resolution recognising the need for the Convention to provide guidance to Contracting Parties on Articles 2.5 and 4.2 was passed. The resolution also addresses situations where site boundaries may need further definition but are not in the urgent national interest. The Conference of Parties agreed to Australia bring forward a study for the development of a more generalised approach for consideration at the 8th Conference of Parties in 2002.

Imperative

The boundary of the Coongie Lakes Ramsar site needs to reflect the ecological and hydrological character of the site and promote the Wise Use of the wetland.

Outcome

A defined boundary to the wetlands that appropriately reflects the diversity of ecological and hydrological characteristics of the Coongie Lakes Ramsar site.

Actions

- 1 Support the Commonwealth Government's case study to redefine the boundary of the Coongie Lakes Ramsar site.

Zoning

Current Situation

The resources in the area covered by the Ramsar wetland that are utilised for the benefit of humankind include petroleum products, native pastures used for livestock production, an inland fishery, and the aesthetic, existence and bequest values that attract tourists and have inspired a strong conservation commitment from the local and wider community. The Ramsar Convention gives support to the Wise Use of the resources of the Coongie Lakes Ramsar Wetlands.

The community in the main, believes that the existing frameworks and management mechanisms can ensure that management meets Wise Use and ecologically sustainable development principles. There are however some sites where the objectives and activities of different land uses may be in conflict. The Ramsar convention promotes the use of zoning to address such issues. Also in these situations technical and scientific information and an integrated approach to decision making is required.

The South Australian and Commonwealth Government's strategy for balancing the various community and environmental needs has been through the passing of Acts of Parliament. The implementation of this legislation is through government departments, community based boards, consultation and education. National and State strategies and policies have been developed to guide the activities of these boards and government agencies.

These administrative structures and their functions are listed in the boxes in the section on Responsibility and Care. Over the last few years these groups have put considerable effort into development of management plans and codes of environmental practice. These processes have been and continue to be supported by State and Commonwealth Governments. Government also supports the implementation of the plans and guidelines and ensures the audit their effectiveness. The plans and codes provide criteria and management guidelines for the various land types and wetland zones within the Coongie Lakes Ramsar Wetlands⁴⁶.

Further to, and complementary with, these statutory regional plans, individual businesses including some pastoral businesses and petroleum producers have developed their own resource management plans, property management plans and codes of practice.

The main portion of the wetland is within the Innamincka Regional Reserve administered by National Parks and Wildlife South Australia for conservation of wildlife and use of natural resources. The entire area of the Reserve is leased for pastoral production and portions of the reserve for oil and gas exploration and production.

Visitor access is mainly limited to areas of the Cooper Creek and Coongie Lakes within the Innamincka Regional Reserve and to the Innamincka township precinct. Within the Reserve, National Parks and Wildlife SA are responsible for managing visitor impacts and behaviour. National Parks & Wildlife provide visitor services, facilities and interpret the hydrological and ecological diversity of the area for the enlightenment of the wider community.

The remainder of the Coongie Lakes Ramsar Wetlands site is held under pastoral leases administered by the Pastoral Board. Some areas are also held under various petroleum and mineral exploration licences and petroleum production licences administered by Primary Industries and Resources South Australia.

Imperative

It is necessary to achieve a balance between the needs of the various users, occupiers and interests in the Coongie Lakes Ramsar Wetlands. It is also necessary to balance resource use with conservation and protection of the ecological and cultural character.

Threats to the ecological and cultural integrity of the wetland by resource utilisation do exist. These threats include vegetation removal and habitat destruction, disturbance to wildlife, disturbance to cultural sites and the collection of artifacts, pollution and introduction of alien plant and animal species. These threats need to be documented and Wise Use management prescriptions and abatement programs defined in an equitable and meaningful way.

It is essential that Government agencies maintain and where appropriate expand commitments to research, monitoring and the development of management guidelines and codes of practice for the various industries. Such guidelines and codes need to be reviewed and updated to take account of new knowledge and low impact technologies. In particular policies and guidelines for the management of the Cooper Creek fishery are urgently needed.

Visitor access is another issue that can impact on the management and enjoyment of the area. It is necessary to manage visitor access so that it does not interfere with industry operations and such that the visitor wilderness and aesthetic experience is maintained.

To limit the impact of visitor access on non-tourism based businesses in the area, visitors need to be directed to those areas where there are appropriate facilities, services and access management structures. Strategies for enhancing visitor experience and managing visitor impacts need to be included in a revision of the Plan of Management for Innamincka Regional Reserve.

To ensure the Wise Use of this wetland, threats to biodiversity conservation and to sustainable viable industries in the area need to be identified and minimised. Zoning is one mechanism that could be utilised to greater effect in these circumstances.

Outcome

The wetlands zoned as (1) core (frequently flooded) wetland, (2) greater wetland system and (3) non-wetland area. Each are to have proscribed activities, management prescriptions and specific resource use codes of practice that tailor management to the characteristics of these zones so that wetland values are protected thus allowing for Wise Use of the resources within the Ramsar wetlands.

Actions

- 1 Establish a task-force and set terms of reference for the task force to determine zones.
- 2 Establish a task-force and set terms of reference for the task force to determine proscribed activities for the defined zones
- 3 Utilize resource focus groups to determine and regularly review management prescriptions and codes of practice for land use within the wetland zones.
- 4 Adopt as South Australian Government Policy the zones, proscribed activities and procedures for review of management prescriptions.
- 5 Include these zones, the proscribed activities and procedures for review of management prescriptions in the revised Plan of Management for Innamincka Regional Reserve.

Wise Use is the sensitive, responsive and responsible
use of the wetlands by all users.

Conserving Biodiversity and Heritage

Current Situation

Many of the structures already in place to ensure Wise Use also provide mechanisms to protect and conserve biodiversity and cultural heritage from threatening processes. Additional conservation structures include:

- National Estate and State Heritage listing.
- Innamincka Regional Reserve provides a conservation framework over a significant portion of the Coongie Lakes Ramsar Wetlands,
- Coongie Lake and Cullyamurra Waterhole conservation paddocks within the Innamincka Regional Reserve are stock free enclosures around the most frequently inundated sites (drought refugia) of the Wetlands.
- The Aboriginal Site Conservation Strategy for South Australia is a program of determining and implementing site conservation requirements.

It can be argued that these structures do not provide sufficient protection to the values of these internationally significant wetlands. The dedicated conservation areas - Coongie and Cullyamurra Waterhole conservation paddocks – provide examples of the most frequently wet habitats and drought refugia for aquatic organisms, but they do not include all habitats in this category. Appropriate Wise Use for the less frequently flooded wetland habitats needs to be considered.

It may be that pastoral livestock production, a land use in the area for over 100 years and focussing selective grazing on wet environments and some plant species, has or could be altering plant community structures and putting some species and plant communities at risk. This impact needs to be quantified.

At present a task force is facilitating a process to determine the appropriate level of protection required from impacts of petroleum exploration and extraction activities in the Coongie Lakes area.

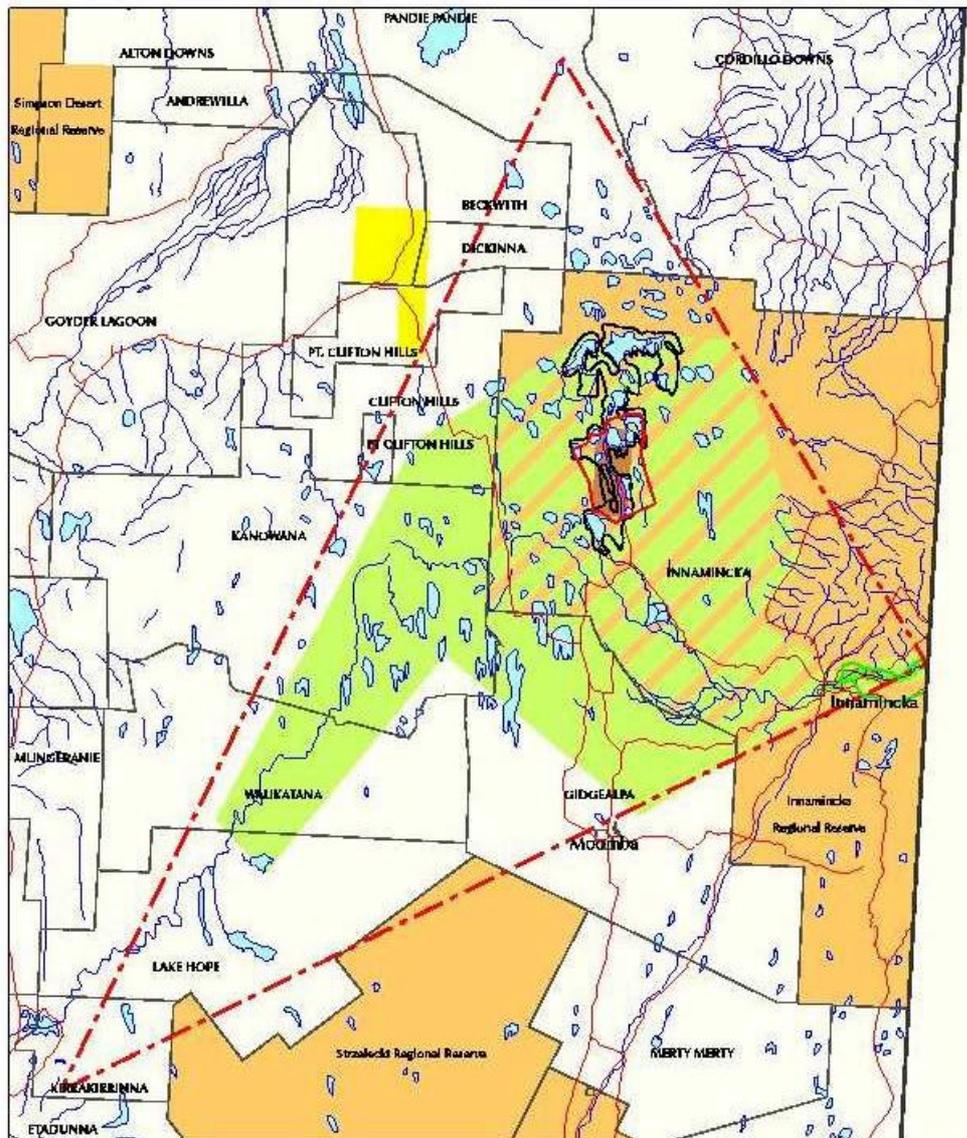
Weeds are not yet a significant problem in the Coongie Lakes Ramsar Wetlands. However couch grass and Mexican poppy are apparent recent introductions that have pest plant potential. These weeds may present as problems in the future. Other species, such as prickly acacia, are a major problem in the upper reaches of the Cooper system.

The introduction of exotic fish, invertebrates or diseases to the wetland poses a threat to the ecological integrity of aquatic fauna and dependent waterbirds and needs to be guarded vigilantly against.

The research and application of the Rabbit Calicivirus Disease (RCD) has reduced although not removed the significant impact of the rabbit on the ecology of the area.

There are many sites of significance to Aboriginal people, including and in addition to sites of archaeological and anthropological significance and historic sites in the region. Threats to these sites vary but include souvenir collecting, vehicle and pedestrian damage. The *Aboriginal Heritage Act, 1988* provides protection to sites and artifacts. It is important that visitors to the area are informed about cultural significance to avoid inadvertent damage.

Figure 3 Areas of Conservation Significance within the Coongie Lakes Ramsar Wetlands



Coongie Lakes Ramsar Wetlands

- Cooper Creek and Adjacent area, National Estate
- Cooper Creek Floodplain, National Estate
- Koonchera Dune Area, National Estate
- Innamincka Historic Area/Cooper Creek State Heritage Area
- Regional Reserves

 Coongie Lakes wetlands of international importance (Ramsar Convention)

 Coongie lakes Control Zone

 Coongie enclosure

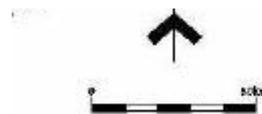
 Cullyamurra enclosure

 Pastoral lease boundary

 Roads

 Drainage

Produced by: BIODIVERSITY MONITORING AND EVALUATION
Department of Environment, Heritage and Aboriginal
Affairs and
INFORMATION AND DATA ANALYSIS BRANCH
Planning SA
Data Source: Department for Transport, Urban Planning and the Arts
National Estate - ERM of Environment Australia
Roads - Transport SA
NPWS boundaries - Dept of Environment, Heritage and
Aboriginal Affairs
Projection: Lambert Conformal Conic
Data: Australian Geodetic Datum, 1984
Compiled: April 1999



Imperative

The Australian community has made a commitment to protecting this wetland, its ecological character, biodiversity and hydrological diversity. We are also committed to protecting sites of cultural significance within these wetlands.

The imperative is the identification and management of threats to biodiversity and heritage conservation including:

- regular audit and monitoring of land use and impacts on wetland values
- a catchment approach to weed identification, planning, risk analysis and plan implementation
- a regional approach to pest animal control
- the development and implementation of strategies to exclude exotic diseases of fish
- the development of arrangements necessary to preserve the cultural ties of Aboriginal people with places of significance to them
- a regional approach to the ongoing survey of the Aboriginal cultural landscape and compilation of the archaeological record.

Outcome

The maintenance of the near natural hydrological and ecologically functioning of Coongie Lakes Ramsar Wetlands.

Actions

1. Support the processes of negotiation with the Queensland and Commonwealth Governments that aim to maintain the current near natural and variable flows of the Cooper Creek.
2. Ensure that “Wise Use Codes of Practice” minimise risk of negative impacts threatening hydrological and ecological values of the Coongie Lakes Ramsar Wetlands.
3. Ensure that revisions of existing resource management plans and development of new resource management plans address effective control of pest animals, weeds and exotic diseases.

Outcome

Preservation of the cultural landscape.

Actions

1. Ensure that regional assessments of cultural heritage identify sites and places of cultural heritage significance.
2. Ensure that plans are developed and implemented for the protection, management and conservation of Aboriginal and non-aboriginal heritage sites within the Coongie Lakes Ramsar Wetlands.
3. Ensure that interpretive materials acceptable to the traditional custodians are available to the local and wider community about the natural and cultural heritage of the wetlands.
4. Ensure that, prior to any development in the region, developers consult with appropriate Aboriginal interest groups so that the development activity may avoid affecting sites or places of significance to them.
5. Ensure that prior to any development in the region, developers comply with any native title obligations which may be applicable.

Outcome

Continuation and enhancement of the living culture of the wetland area.

Actions

1. Facilitate the development of access arrangements necessary to preserve the cultural ties of Aboriginal people with places of significance.
2. Facilitate actions to support the social fabric of the region.

It is important that we conserve for future generations
the biodiversity of the wetlands,
the hydrological processes on which life depends
and the cultural heritage values of the area.

Better Understanding

Current Situation

The Coongie Lakes Ramsar Wetlands has a diverse range of permanent and ephemeral aquatic habitats. The pastoral and tourism industries in the region are dependant on these habitats and the flows and floods that maintain them. The wider community appreciates the area's aesthetic, cultural, heritage, biodiversity, geodiversity, existence and bequest values.

We have some understanding of most of the impacts of resource use on the Coongie Lakes Ramsar Wetlands, however there is more to learn if we are to maintain the ecological character and productivity of the area for future generations.

Rare, endangered, and endemic species require specific management strategies. Critical habitats for breeding and rearing young and the key ecological processes that sustain these habitats are currently either not known or not well understood. Knowledge and status of aquatic species is limited. Status of waterbird species is better known but understanding of requirements for breeding is poorly known.

There is also still much to learn on how to get better output from biological resources, how to maintain the genetic base of harvested biological resources, how to rehabilitate degraded ecosystems and how to combat threats from feral animals and weeds. Knowledge of the functioning of this large and mostly unregulated catchment may help to repair and better manage highly modified and degraded catchments such as the Murray-Darling Basin.

Better knowledge and understanding of the characteristics of the variety of wetland habitats and the requirements of species, will assist in the development and application of lower impact strategies and technologies. Factual information about the wetland will support community understanding of the values of the wetland, and the principles of its management.

Current and recently completed research and monitoring on the wetlands is summarised below.

Water Quality Monitoring - Cooper Creek at Cullyamurra waterhole is monitored for ambient and biological water quality attributes as part of the Australian River Assessment Program (AUSRIVAS). This work aims to:

- improve the knowledge of the ecological health of our rivers and streams
- assess the impact of pollution and other human induced impacts on our rivers and streams
- assess the effectiveness of water and catchment management actions in the future
- develop predictive models to assist in planning and pollution management.

Hydrological Monitoring and Modelling - Water levels are monitored at Cullyamurra waterhole. This data is used to calculate flows in the lower reaches of Cooper Creek. Some basic water quality data is also collected during gauging station maintenance and downloading. Daily flow heights using depth indicators at the Innamincka causeway have also been collected during floods.

Hydrological and Ecological Modelling - Research into the relationship between Cooper Creek flows and ecological responses in the South Australian Cooper floodplains and Coongie Lakes has been compiled into a descriptive, analytical and predictive model called DRY WET. This model describes some of the major processes governing the hydrology and aquatic ecology of lower Cooper Creek and of arid zone river systems generally⁴⁷.

A further project titled ARIDFLO is proposed to test the predictions of DRYWET in a two-year multidisciplinary sampling program in arid and semi-arid rivers of the Lake Eyre Basin in both South Australia and Queensland. A part of ARIDFLO will be a more fully developed hydrological model (IMAGHYD).

Fishery Research and Monitoring - Research by the South Australian Research and Development Institute (SARDI) and the former Department of Fisheries has focussed on:

- determining the species diversity (genetic status) of the fish stock
- identifying drought refuges for fish in the region
- determining habitat preference and requirements of fish species
- developing methodologies for measuring fish abundance and composition as an ongoing index of resource health, and

- developing an understanding of post flood dynamics of waterhole fish stocks.

This data will assist in the development of a fishery management plan and data collection and resource monitoring should continue.

Water Bird Surveys - Waterbird surveys have been carried out in the wetland as part of comprehensive biological surveys and on an ad hoc basis. A summary of the waterbird diversity and abundance data is appended to the Ramsar Information Sheet (Appendix B).

Cultural Heritage, Archaeological and Anthropological survey - Cultural heritage and archaeological survey is a necessary precursor to any development in the area. These surveys need to be undertaken in a manner that insures the meaningful preservation of the cultural landscape. Areas of cultural sensitivity that are identified are avoided and recorded. A program for further assessment needs to be developed to better understand the regional cultural heritage and its conservation requirements.

Petroleum Exploration and Production Impact Assessment and Monitoring - Primary Industries and Resources South Australia inspect petroleum operations and assess compliance with Codes of Environmental Practice. Any non-compliance or likelihood of long term impact was identified and remedied by the operator. Information and experience gained from these audits, industry and government staff and specific studies have been used in the evolution of improved environmental planning, assessment and minimisation of impacts from petroleum operations and the regular update of Codes of Environmental Practice.

Pastoral Lease Assessment

The Pastoral Board assesses all pastoral leases within the Ramsar site and the Innamincka Pastoral enterprise. The assessment program assesses and monitors fixed sites for trends in rangeland condition. At these sites soil surface stability and vegetation vigor and diversity are assessed. This assessment program and other Landcare projects are promoting and supporting rangeland condition assessment by pastoral land managers. In addition to grazed sites some ungrazed sites and stock and/or rabbit exclosures are also monitored as reference sites and for comparison with grazed sites.

Another project – Sustainable Grazing on the Channel Country Floodplains - aims to identify for the channel country floodplain grazing systems which are ecologically sustainable, and to support and encourage channel country beef producers to manage their herds in accordance with such grazing systems.

Imperative

The Coongie Lakes Ramsar Wetlands region is of great ecological, cultural and economic importance to the State. Understanding and monitoring the fundamental ecosystem processes and habitats that produce and maintain these resources is essential for maintaining the natural heritage and resource base of the wetland environment. Acquiring this knowledge provides the basis for conserving and managing these values in accordance with the Ramsar and other legislative and treaty commitments (see box page 20).

We are gaining an increasing knowledge about the hydrology and biology of the wetlands and their inter-relationships. To better understand the likely impacts if further extraction of water from the Cooper system were permitted, research needs to be extended to include more upstream data and more species. In addition, the biology of known rare, endangered and endemic species and species that have potential for commercial exploitation needs to be examined.

There are other threats to this important ecosystem. These include introduced aquatic and terrestrial plants, animals and diseases, pollution, vegetation removal and habitat fragmentation and noise disturbance to wildlife particularly when breeding. There is a need to better understand each of these threats and to develop means to avoid and/or ameliorate them.

Any such research and monitoring needs to take a collaborative approach and proactively involve researchers, community, industry and government.

There is a need for greater coordination and dissemination of results and knowledge between research programs and between researchers, land managers and decision makers. The acquired knowledge of researchers and land managers needs to be readily available and widely distributed.

It is important that the need for research and monitoring is recognised as necessary to guide resource management, biodiversity conservation and pollution management.

Outcome

An expanding knowledge base to improve understanding of wetland functions.

Actions

1. Identify sensitive and accurate indicators of wetland values to measure wetland health.
2. Encourage further research, monitoring and data refinement as a cooperative enterprise between government, research institutions and other stakeholders to improve knowledge of the Cooper Creek system.
3. Ensure the continued gauging of Cooper Creek flows at Cullyamurra Waterhole and investigate the establishment of gauging stations on the Main and North-West Branches of Cooper Creek to improve understanding of the flow rates to the core wetlands.
4. Identify the range of habitats, and their importance to the life cycles of the biota of the region.
5. Improve modelling of hydrology to enable the prediction of flow rates and those areas inundated.
6. Develop and implement monitoring and evaluation procedures for riparian and wetland zones to assess impacts of resource uses on biodiversity values.
7. Support the development and distribution of information to inform the community better about the natural and resource values of the wetlands and requirements and processes for their protection and management. The information needs to be presented in forms that are both understandable and accessible to a broad cross section of the community.

Our growing understanding of the ecological character
of this and other wetland systems
will improve our decision making about Wise Use

Working Together

Current Situation

The community actually living and working within the Coongie Lakes Ramsar Wetlands is small. People contributing to the administration of industry and conservation in the area largely live outside the region. The workforce of the petroleum industry works on a fly-in, fly-out roster, with many staff having a long association with the area.

This small local community, as well as the staff of various administrative services and other stakeholders and interest groups contributes a great deal of their time and energy to working together for the benefit of the region.

Community and industry co-operative action occurs through various boards, committees and groups (see boxes in the Responsibility and Care section) developed to assess, plan and implement sustainable land, water and biodiversity management practices.

Aboriginal people with an interest in the Ramsar area and living external to the site want to be consulted in regard to activities in the area. There are several Native Title claims over sections of the wetland, which provide an indication of Aboriginal people's association with the area. Agreements developed as a consequence of the Native Title legislation will form a basis for co-operative action between claimant groups, industry and the wider community.

In the last few years community consultation throughout the Cooper Creek Catchment and wider Lake Eyre Basin has led to the establishment of the Lake Eyre Basin Coordinating Group and the Cooper Creek Catchment Committee. These newly formed cross-jurisdictional advisory groups have no statutory authority but have the support and involvement of South Australian, Queensland and Commonwealth Governments. The groups are currently developing their roles, terms of reference, a Catchment Strategy and Action Plans.

Imperative

The area of the Coongie Lakes Ramsar Wetlands is either Leasehold Land or Regional Reserve over which there are various leases to individuals and companies to carry out resource utilization. The local and wider community has a right, through defined avenues, to be informed and involved in decisions on use and resource allocation. Associated with these rights are responsibilities for protection and stewardship of the resource. All users need to acknowledge that they have a role and responsibility to care for the Coongie Lakes Ramsar Wetlands. This principle needs strong reinforcement by government, industry and community.

Community consultation considerably enhances the preparation and application of public policies. Discussion of the issues generates increased confidence and understanding about management actions. Such consultation needs to provide mechanisms for all interested parties to have input, for the integration of decision making across resource users, and for the proper consideration and application of scientific and technical information.

There needs to be recognition of the association and interest of Aboriginal people with the Coongie Lakes Ramsar Wetlands along with facilitation of Aboriginal involvement in decision making and activities in the area, subject to South Australian Government policy relating to the resolution of native title claims.

A better-informed community develops from the teaching of children and adults about the natural values of the wetland environment and by providing information in readily available forms and providing opportunities for taking responsibility for resource protection and management.

It is also important that where changes to land management are necessary for the conservation of habitats or species cost effective and flexible policy instruments which uphold the principles of full and fair compensation are adopted.

There needs to be clear management arrangements for implementation of the actions prescribed in this plan.

Outcome

People working together to achieve conservation and wise use of this wetland and community support for the outcomes and actions of this plan.

Actions

1. Ensure adequate fora are provided for people with legitimate interests in the area to be actively involved in implementing the actions of this plan.
2. Support the Lake Eyre Basin Coordinating Group and the Cooper Creek Catchment Committee (non-statutory cross-border advisory committees) in the development and implementation of catchment strategies and action plans for the Cooper Creek Catchment.
3. Develop a scientific and technical group to provide advice and to successfully integrate scientific understanding with resource management and decision making.
4. Provide support for and constructive input into the various management boards and committees (see boxes in the Responsibility and Care section of this plan) that audit, plan and manage resource use in the Coongie Lakes Ramsar Wetlands.
5. Support the development of mutually acceptable Agreements between Native Title claimants and industry groups and National Parks & Wildlife SA to form a basis for cooperative action in the region.

Working together for the Coongie Lakes Wetlands
means being committed to their Wise Use and
recognising the rights and interests of all people concerned.

11 ACTION PLAN

Commitment	Outcome	Action	Who is responsible?	Who else is to be involved?
Naturally Flowing Cooper Creek	Continuation of the hydrological diversity of the Cooper Creek flowing into South Australia by ensuring water allocations that are consistent with the Heads of Agreement and the Council of Australian Governments Water Reform Framework.	1. Continue negotiations between the Queensland, South Australian and Commonwealth Governments to develop a cross border Agreement to provide a framework for managing cross-border water resource issues.	South Australian Minister for Environment and Heritage	Queensland Minister for Environment, Commonwealth Minister for Environment
		2. Pending finalization of the Agreement, request that the Queensland Government allocate no additional water from the Cooper Creek and insist that the catchment be managed within the spirit and intent of the 'Heads of Agreement in Relation to the Management of the Lake Eyre Basin' and other relevant strategies and agreements.	South Australian Minister for Environment and Heritage	
		3. Continue input into Queensland's Water Management Plan for the Cooper Creek to ensure the maintenance of the existing hydrological character of the wetlands.	Environment Policy Division of DEHAA	
		4. Establish appropriate ecological, hydrological and physical water quality benchmarks.	Heritage & Biodiversity and Environment Protection Divisions of DEHAA	
Wise Use	Site Boundary A defined boundary to the wetlands that appropriately reflects the diversity of ecological and hydrological characteristics of the Coongie Lakes Ramsar site.	1. Support the Commonwealth Government's case study to redefine the boundary of the Coongie Lakes Ramsar site.	Environment Australia	DEHAA
	Zoning The wetlands zoned to (1) core (frequently flooded) wetland,(2) greater wetland system and (3) non-wetland areas. Each to have proscribed activities, management prescriptions and specific resource use codes of practice that tailor management to the characteristics of these zones so that the wetland values are protected thus allowing for Wise Use of the resources within the Ramsar wetlands	1. Establish a task-force and set terms of reference for the task force to determine zones.	Department for Environment Heritage and Aboriginal Affairs (DEHAA)	Representatives from industries, community, PIRSA, Commonwealth
		52		

Commitment	Outcome	Action	Who is responsible?	Who else is to be involved?
		2. Establish a task-force and set terms of reference for the task force to determine proscribed activities for the defined zones.	DEHAA and Primary Industries and Resources South Australia (PIRSA) initiated task force	Industry and community involvement
		3. Utilize resource focus groups to determine and regularly review management prescriptions and codes of practice for land use within the wetland zones.	DEHAA and PIRSA initiated task force	Industry and community involvement
		4. Adopt as South Australian Government Policy the zones, proscribed activities and procedures for review of management prescriptions.	South Australian Government	
		5. Include these zones, the proscribed activities and procedures for review of management prescriptions in the revised Plan of Management for Innamincka Regional Reserve.	National Parks and Wildlife SA (NP&W SA) division of DEHAA	
Conserving Biodiversity and Heritage	The maintenance of the near natural hydrological and ecological functioning of Coongie Lakes Ramsar Wetlands.	1. Support the processes of negotiation with the Queensland and Commonwealth Governments that aim to maintain the current near natural and variable flows of the Cooper Creek.	Environmental Protection Agency and Heritage and Biodiversity Division	Arid Areas Water Resources Committee or subsequent Water Catchment Boards
		2. Ensure that "Wise Use Codes of Practice" minimise risk of negative impacts threatening hydrological and ecological values of the Coongie Lakes Ramsar Wetlands.	DEHAA	
		3. Ensure that revisions of existing resource management plans and development of new resource management plans address effective control of pest animals, weeds and exotic diseases.	Specific Statutory Bodies as listed in Responsibility and Care section.	
	Preservation of cultural landscape.	1. Ensure that regional assessments of cultural heritage identify sites and places of cultural heritage significance.	Aboriginal Affairs and State Heritage Divisions of DEHAA	
		2. Ensure that plans are developed and implemented for the protection, management and conservation of Aboriginal and non-aboriginal heritage sites within the Coongie Lakes Ramsar Wetlands.	Aboriginal Affairs and State Heritage Divisions of DEHA	National Heritage Division
		3. Ensure that interpretive materials acceptable to the traditional custodians are available to the local and wider community about the natural and cultural heritage of the wetlands.	NP&W SA	Community
		4. Ensure that, prior to any development in the region, developers consult with appropriate Aboriginal interest groups so that the development activity may avoid affecting sites or places of significance to them.	Industry Groups and NP&W	
		53		

Commitment	Outcome	Action	Who is responsible?	Who else is to be involved?
		5. Ensure that prior to any development in the region, developers comply with any native title obligations which may be applicable.	Industry groups and DEHAA	Crown Solicitor and Aboriginal Legal Rights Movement
	Continuation and enhancement of the living culture of the wetland area.	1. Facilitate the development of access arrangements necessary for Aboriginal people to visit places of significance.	Crown Solicitor, NP&W SA and Pastoral Lessees.	
		2. Facilitate actions to support the social fabric of the region.	Innamincka Progress Association	NP&W SA, Local community and industry.
Better Understanding	An expanding knowledge base to improve understanding of wetland functions.	1. Identify sensitive and accurate indicators as surrogates of wetland values to measure wetland health.	NP&W SA	
		2. Encourage further research, monitoring and data refinement as a cooperative enterprise between government, research institutions and other stakeholders to improve knowledge of the Cooper Creek system.	DEHAA	
		3. Ensure the continued gauging of Cooper Creek flows at Cullyamurra Waterhole and investigate the establishment of gauging stations on the Main and North-West Branches of Cooper Creek to improve understanding of the flow rates to the core wetlands.	Environmental Protection Agency and Heritage and Biodiversity Division	
		4. Identify the range of habitats, and their importance to the life cycles of the biota of the region.	NP&W SA	Tertiary and Research institutions
		5. Improve modelling of hydrology to enable the prediction of flow rates and those areas inundated.	Environmental Protection Authority Division of DEHAA	Tertiary and Research institutions
		6. Develop and implement monitoring and evaluation procedures for riparian and wetland zones to assess impacts of resource uses on biodiversity values.	Statutory Boards and Committees	
		7. Support the development and distribution of information to better inform the community about the natural and resource values of the wetlands and requirements and processes for their protection and management. The information needs to be presented in forms that are both understandable and accessible to a broad cross section of the community.	SA Government, industry groups and statutory boards and committees	
Working Together	People working together to achieve conservation and wise use of this wetland and community support for the outcomes and actions of this plan.	1. Ensure adequate fora are provided for people with legitimate interests in the area to be actively involved in implementing the actions of this plan.	South Australian Minister for Environment and Heritage	DEHAA
		2. Support the Lake Eyre Basin Coordinating Group and the Cooper Creek Catchment Committee (non-statutory cross-border advisory committees) in the development and implementation of catchment strategies and action plans for the Cooper Creek Catchment.	DEHAA and PIRSA	

Commitment	Outcome	Action	Who is responsible?	Who else is to be involved?
		3. Develop a scientific and technical group to provide advice and to successfully integrate scientific understanding with resource management and decision making.	NP&W Council	
		4. Provide support for and constructive input into the various management boards and committees (see boxes in the Responsibility and Care section of this plan) that audit, plan and manage resource use in the Coongie Lakes Ramsar Wetlands.	South Australian Government	
		5. Support the development of mutually acceptable Agreements between Native Title claimants and tenure holders within the wetland to form a basis for cooperative action in the wetlands.	DEHAA	Crown Solicitor

12 END NOTES

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