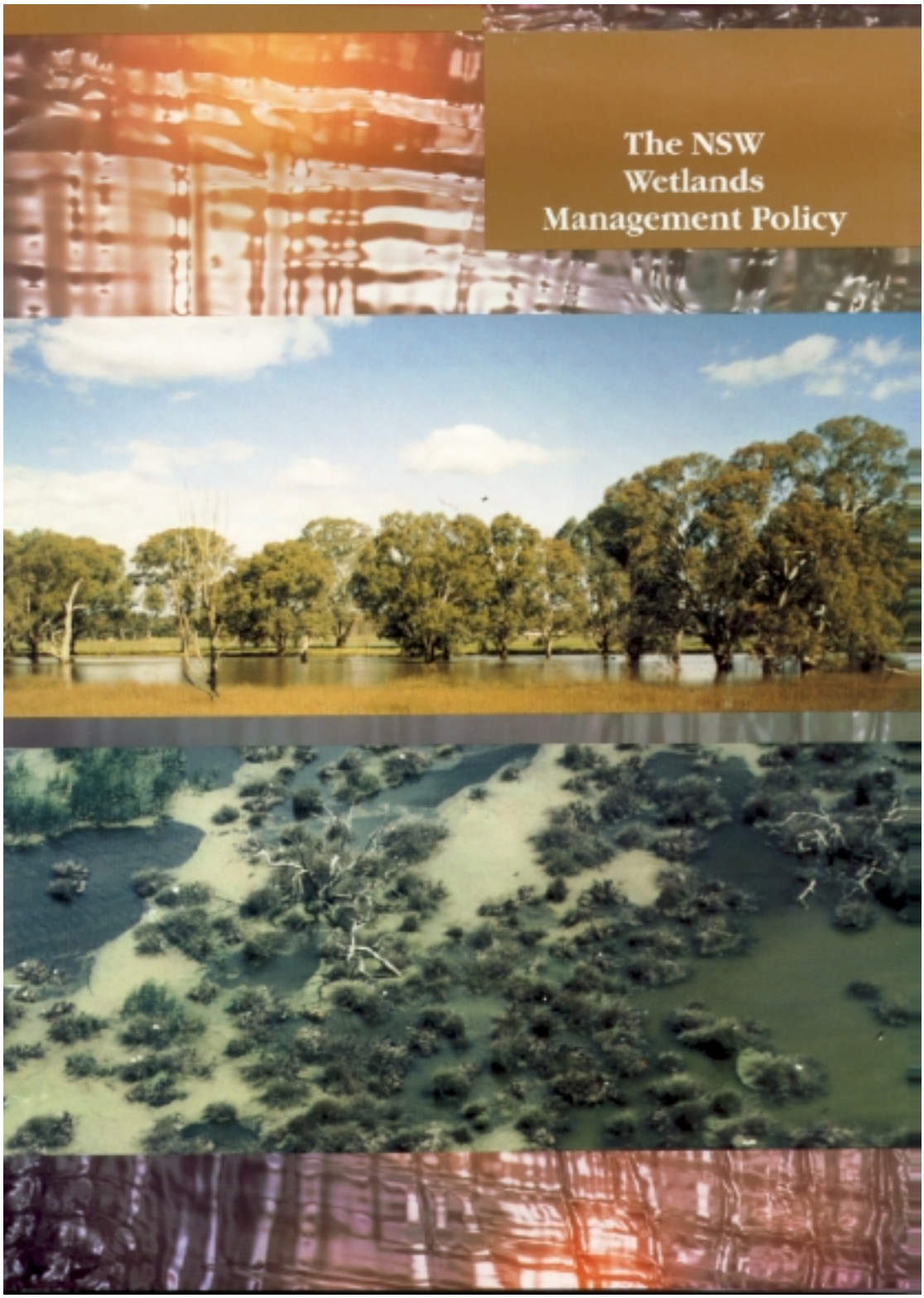

Cover Plates:

Above: A freshwater wetland associated with the Murray River, near Corowa
Below: Berangerine Swamp on the Lower Mirool Creek, west of Griffith.

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The NSW Wetlands Management Policy

NSW Government

Prepared by:

Department of Land & Water Conservation

CONTENTS

Overview of the Policy

It is the policy of the NSW Government to:

1. encourage the management of the wetlands of the State so as to halt and where possible, reverse:

- loss of wetland vegetation;
- declining water quality;
- declining natural productivity;
- loss of biological diversity; and
- declining natural flood mitigation.

2. encourage projects and activities which will restore the quality of the State's wetlands, such as:

- rehabilitating wetlands;
- re-establishing areas of buffer vegetation around wetlands; and
- ensuring adequate water to restore wetland habitats.

Adoption of the NSW Wetlands Management Policy means that the Government, in its decision-making, will give explicit consideration to the biophysical requirements of wetlands with the goal of ensuring their sustainable management.

The Government will adopt a common goal to guide decision-making for wetlands:

"The ecologically sustainable use, management and conservation of wetlands in NSW for the benefit of present and future generations."

The Government will achieve this goal by adopting the following principles:

- Water regimes needed to maintain or restore the physical, chemical and biological processes of wetlands will have formal recognition in water allocation and management plans;
- Land use and management practices that maintain or rehabilitate wetland habitats and processes will be encouraged;
- New developments will require allowance for suitable water distribution to and from wetlands;
- Water entering natural wetlands will be of sufficient quality so as not to degrade the wetlands;

- The construction of purpose-built wetlands on the site of viable natural ones will he discouraged;

- Natural wetlands should not be destroyed, but when social or economic imperatives require it, the rehabilitation or construction of a wetland should be required;

- Degraded wetlands and their habitats and processes will he actively rehabilitated as far as is practical;

- Wetlands of regional or national significance will be conserved; and

- The adoption of a stewardship ethos and co-operative action between land and water owners and managers, government authorities, non-government agencies and the general community is necessary for effective wetland management.

These principles are discussed in more detail within this policy document.

The Policy will be implemented in four main ways by:

- applying these principles to decision-making by Government agencies in their activities affecting wetlands;

- co-ordinating the wetland work of Government agencies;

- providing support to the community; and

- preparing an annual Wetland Action Plan.

Implementation of the Policy will be overseen by the State Catchment Management Coordinating Committee and preparation of the Wetland Action Plan will be undertaken by a sub-committee with representation from relevant Government, industry and community bodies.

1. Context of the Policy

Ecologically Sustainable Development has been defined as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987). The United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro in 1992 and attended by most of the world's governments, adopted ecologically sustainable development as the basis for future decision-making. The adoption at the conference of the Rio Declaration and its accompanying action plan, Agenda 21, provides a broad framework for global sustainable development.

Within Australia, the Federal and State Governments have endorsed the *National Strategy for Ecologically Sustainable Development* (Commonwealth of Australia, 1992) in order to pursue this goal. In signing the Inter-Governmental Agreement on the Environment (IGAE), the Council of Australian Governments (COAG) put in place a framework for co-ordinated and consistent decision-making on environment and development issues. In 1994, COAG recognised in a formal communiqué that widespread natural resource degradation has occurred that has impacted on the quality and/or quantity of the nation's water resources. It adopted a framework for the efficient and sustainable reform of the water industry that included making formal allocations of water to the environment, based on the best scientific information available.

Ecologically Sustainable Development has been adopted in this Policy to provide a basis for the protection of the wetlands of NSW.

The *State Rivers and Estuaries Policy* was approved by the NSW Government in 1991. This Policy established the framework for the management of rivers and estuaries of NSW and related ecosystems, such as wetlands. It is based on the Total Catchment Management (TCM) philosophy defined in the Catchment Management Act, 1989 as "the co-ordinated and sustainable use and management of land, water, vegetation and other natural resources on a catchment basis so as to balance resource utilisation and conservation." The State Catchment Management Co-ordinating Committee, with membership from Government agencies and the community, is the central co-ordinating mechanism for Total Catchment Management throughout NSW. The objectives of TCM are to ensure that natural resources are managed by:

- co-ordinating policies, programs and activities as they relate to catchment management;
- achieving active community participation in natural resource management;
- identifying and rectifying natural resource degradation;
- promoting the sustainable use of natural resources; and
- providing stable and productive soil, high quality water and protective and productive vegetation cover within each of the State's catchments.

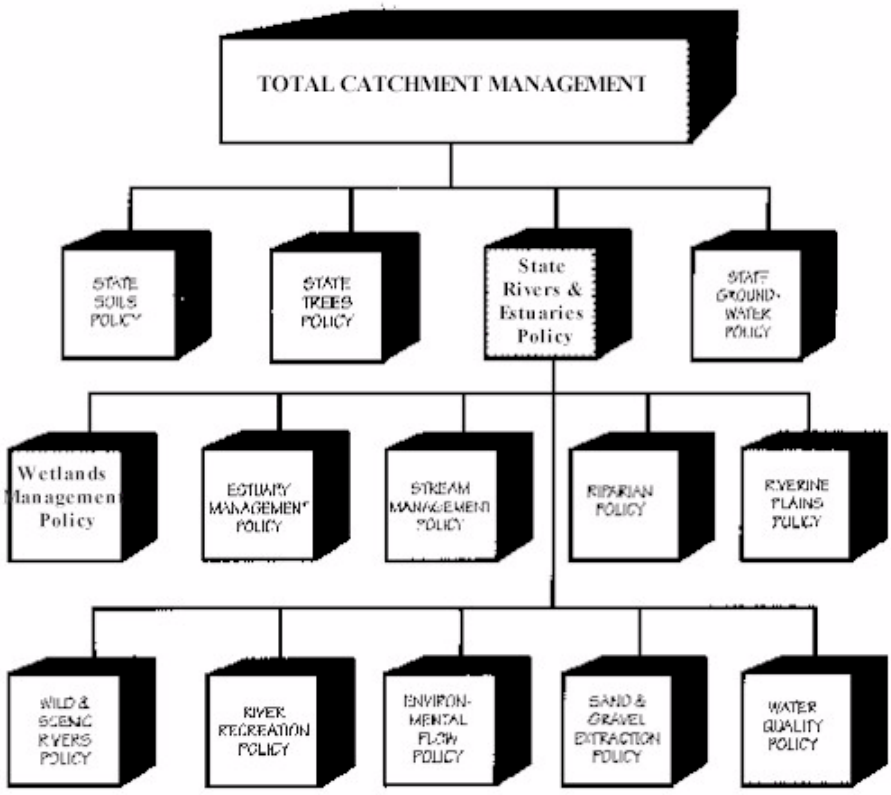
The TCM approach recognises that the health and use of wetlands are affected by activities occurring in other parts of the catchment. Similarly, activities occurring in wetlands affect the health and use of other parts of the catchment. Thus a catchment-wide focus is needed to effectively manage wetlands.

A key element of integrated catchment management is that it recognises there is often no single way to solve a catchment problem. The best solution requires a range of people bringing their skills together to tackle the problem.

Regional and local Catchment Management Committees and Estuary Management Committees have been set up throughout NSW to help co-ordinate natural resource management. These Committees include land holders, State Agency and Local Government representatives and other members of the community.

The NSW Wetlands Management Policy is one of the component policies of the *NSW State Rivers and Estuaries Policy* and will provide clear guidance on wise use, best management practice and rehabilitation of wetlands.

Figure 1. NSW Natural Resource Management



The Policy recognises that while the State plays an important role by targeting its resources for wetland management, it is land holders who are primarily responsible for the management of the overwhelming majority of wetlands. It aims, therefore, to improve wetland management by providing guidance and support to wetland managers. This could include individual land holders, Landcare or Rivercare groups, catchment and estuary management committees, Local Government and State Government agency staff. The Policy complements the broad range of existing legislation that impacts upon wetland management, for example water allocation decisions made under the Water Act, 1912 or tree clearing under the Soil Conservation Act, 1938, by providing clear guidance to those administering the legislation.

The Policy complements planning instruments such as the State Environmental Planning Policy 14 - Coastal Wetlands and the SEPP 46 - Protection and Management of Native Vegetation, which require environmental impact assessment of development activities that could affect some wetlands. Such planning instruments predominantly relate to decision-making for development proposals. The Wetland Management Policy, however, is intended to guide decision-making relating to the day-to-day management of wetlands, management practices in catchments containing wetlands and activities affecting wetlands (such as water flows).

The Policy also complements the new arrangements for water resource management in NSW. The NSW Environment Protection Authority (EPA) is co-ordinating a process to develop water quality and river flow objectives for the State's waterways on a catchment basis. These objectives will provide for the long-term health of the State's river and wetland systems and ensure they have the capacity to support the needs of the NSW community. The Department of Land & Water Conservation is responsible for preparing Catchment Plans to achieve the implementation of these objectives.

2. Purpose of the Policy

The NSW Wetlands Management Policy sets out to:

1. halt, and where possible, reverse:

   - loss of wetland vegetation;
   - declining water quality;
   - declining natural productivity;
   - loss of biological diversity; and
   - declining natural flood mitigation.

2. encourage projects and activities which will restore the quality of the State's wetlands, such as:

   - rehabilitating wetlands;
   - re-establishing vegetation buffer zones around wetlands; and
   - ensuring adequate water to restore wetland habitats.

In NSW, there are about 4.5 million hectares of wetlands, about six per cent of the State's geographical area. These range from mangroves and sea grasses to inland billabongs, ephemeral claypans and salt lakes. Wetlands are ecologically, economically and socially important, providing for:

- biodiversity conservation;
- nursery and breeding grounds;
- improved water quality;
- biological productivity and nutrient recycling;
- flood mitigation;
- groundwater recharge;
- scientific research;
- recreation;

- education;
- foreshore protection;
- grazing;
- aesthetic, cultural and heritage values;
- forestry; and
- uniqueness.

Every day, people make decisions about how wetlands should be managed. An EPA officer decides how much industrial effluent can be discharged into a river upstream of a wetland; a Department of Land & Water Conservation officer decides how much water to release from a dam or how much water can be extracted from a river upstream of a wetland; a council planner decides how a wetland should be zoned or what design or operating conditions to apply to a new development; and a grazier decides how many head of cattle to graze in a swamp paddock.

A wide range of legislation establishes procedural and permit requirements for activities affecting wetlands. This legislation includes, but is not limited to, the Environment Planning and Assessment Act, 1973, the Clean Waters Act, 1970, the Water Act, 1912, the Crown Lands Act, 1989, the National Parks and Wildlife Act, 1974, the Coastal Protection Act, 1979, and the Fisheries Management Act, 1994. Clear, consistent criteria by which the impact of such activities may be assessed and permits and approval conditions determined by a range of decision makers is needed.

This guidance is provided by this Policy through:

- Education of community and government on the full range of wetland values;
- All wetland managers, both private landholders and government agencies, being provided with technical information locally relevant best management practice;
- Water allocation and pollution controls which explicitly consider wetlands; and
- Wetland research and monitoring.

This State-wide policy will help steer government and community action toward the same goal.

3. What is a Wetland?

A wetland is exactly what the name suggests: wet land. Wetlands typically contain shallow water, but they may not always be wet. Wetlands are areas that are wet for a long enough period such that the plants and animals living in them are adapted to, and often dependant on, living in wet conditions for at least part of their life cycle.

For the purposes of this Policy, wetlands are defined as land that is:

- inundated with water on a temporary or permanent basis;
- inundated with water that is usually slow moving or stationary;
- inundated with water that is shallow; and
- inundated with water that may be fresh, brackish or saline.

The inundation determines the type and productivity of the soils and the plant and animal communities.

The Policy covers all natural wetlands. It does not apply to existing wetlands which have been constructed to satisfy other purposes (eg sewage treatment, rice production, or stormwater retention) except where that purpose is as a wetland rehabilitated or constructed as compensation for the degradation or destruction of a natural wetland.

Due to the diverse range of wetlands and the fact that most wetlands have been subject to some degree of modification, there may be some problem in defining wetlands. Many experts have attempted to precisely define wetlands, but no definition has been universally accepted.

Generally, there is agreement about most wetlands and the disputes are confined to marginal cases. A common sense approach will be adopted when assessing whether or not an area should be classified as a wetland and hence covered by this Policy. Where there are specific differences of opinion, the Policy provides that technical reference groups can be established to provide advice of a technical nature, including assisting with identification and providing advice on wetland boundaries and other issues arising (refer to section 5).

Why are Wetlands Important?

Plant and wildlife habitat

Wetlands are the habitat for a diverse range of animals including water birds, frogs, invertebrates and fish species, as well as water-loving plants such as sedges, rushes and various tree species like the red gum. Some wetlands in NSW support more than 50,000 birds, including the Macquarie Marshes, Yantabulla Swamp (on the Upper Paroo River), the Paroo River Overflow Lakes and the Bulloo Overflow.

Biological diversity

Wetlands are the border between terrestrial and aquatic environments. They become strategic refuge areas in times of drought, often supporting plants and animals that are found nowhere else. It is estimated that 550 native plants species, 52 fish species and 194 animal species (that is, birds, amphibians and reptiles) are found in NSW wetlands. It is also estimated that 11 plant species found in NSW wetlands are rare or endangered. Eight animal species are listed as vulnerable under Schedule 12 of the National Parks and Wildlife Act and one species is listed as threatened. Most of the migratory bird species listed under international conservation agreements with Australia (such as JAMBA and CAMBA) are found in wetlands.

Nursery and breeding grounds

Wetlands provide important breeding and nursery areas for a large range of animals including birds, fish and invertebrates. Estuarine wetlands (mangroves and salt marshes) have a well recognised link with the productivity of estuarine and offshore fisheries. Two-thirds of the fish caught off the NSW coast spent some time of their life cycle in wetlands and estuaries. Many seasonally flooded inland wetlands are highly significant for the breeding of water fowl.

Catchment water quality

Wetlands improve water quality downstream. As water passes through the wetland it slows down, allowing sediment to settle. Many nutrients and other pollutants in the water or attached to the sediment are removed as the water passes through the wetland. It has been estimated that the natural wetland on the Crackenback River near Thredbo removes up to 44 per cent of incoming phosphorus and 66 per cent of nitrogen. By removing nutrients, wetlands decrease the likelihood of algal blooms forming further downstream. The quality of both surface and groundwater may be improved as it flows through wetlands.

Biological productivity or nutrient recycling

Many wetlands are highly productive ecosystems because of their ability to recycle nutrients. The nutrients are captured by the wetland plants from the water column and sediments, and are recycled through the wetland and associated aquatic ecosystems. Wetlands are adapted to dry out periodically. This is critical for nutrient cycling because during the drying period the accumulated matter is exposed to the air starting the decomposition process. When water returns to the wetland, a sudden burst of nutrients become available for plant, and in turn, animal growth. The result is a highly diverse and productive system bringing about seasonal changes in plant mix and animal grazing patterns (including that of water birds, fish, kangaroos and cattle).

Flood mitigation

Wetlands detain floodwaters or runoff, reducing downstream flood peaks which could otherwise cause erosion and flood damage in the catchment. For example, the Millewa/ Barmah red gum forests on the Murray River reduce flood peaks by 40 to 50 per cent during moderate to major floods.

Scientific Research

Wetlands are storehouses of knowledge about past ecological communities and climatic sequences. Analysis of sediments, such as looking at pollen records, make wetlands valuable places for scientific research. Much of the scientific work, however, is looking at present conditions in order to gain a better understanding of how wetlands function. Studies are conducted on water birds, fish, frog and insect ecology and behaviour, as well as plant ecology.

Groundwater recharge

Wetlands can be sites of groundwater recharge. This is particularly the case in an elevated landscape where the wetland is able to retain surface waters. Unlike a creek which tends to dry out quickly, a wetland drains slowly and hence retains waters that would otherwise flow away. For example, a chain of wetlands found in Centennial Park, Sydney that discharges to Botany say, is groundwater fed in the upper reaches and acts as a filter for highly polluted surface waters. They also provide an important habitat for many waterfowl and the waters are used to irrigate the local golf course.

Recreation

Many wetlands are important sites for bird watching, canoeing, duck hunting, fishing and other recreational pursuits.

Education

Wetlands provide excellent sites for the study of biology and ecology. Each year, about
10,000 school students and a further 20,000 members of the general public visit the Shortland Wetland Centre at Hexham Swamp near Newcastle.

Foreshore Protection

Wetland vegetation growing along the foreshores of lakes, estuaries and river banks helps to protect them from erosion. Some species include Cumbungi, Common Spike Rush and Common Reed.

Social and cultural

Wetlands can provide an important feature in the landscape, becoming a focal point for the community, particularly in inland NSW where they might be the only water body in the local region. This is the case with many tableland wetlands such as Polblue Swamp within the Barrington Tops National Park. Wetlands may be particularly significant to Aboriginal people as a traditional and important source of food and water, as well as being a site of cultural ceremony. For example, the recent discovery of an Aboriginal burial ground within Lake Victoria shows that the area was a centre of vast activity and holds deep cultural significance.

Grazing

Wetlands provide valuable grazing for cattle and sheep. During droughts, wetlands provide feed when other areas are depleted. The challenge is to use the grazing benefit without permanently degrading its ecological values. It is estimated that the wetlands in the Lower Gwydir Valley can carry double the number of stock per hectare than the surrounding dryland pastures. Prolonged intensive grazing on some properties may have adversely affected the ecology of these wetlands. Unfortunately the impact of domestic livestock on the ecological processes in wetlands is poorly understood.

Forestry

With proper management, forestry can be carried out without significantly degrading the other values of wetlands. The river red gum forests of the Murray River floodplain provide valuable timber resources, worth about $26 million annually to the regional economy.

Cropping

In some of the more ephemeral (or transitory) wetlands, it may be possible to undertake limited cropping, providing that it does not interfere with the natural flooding and drying cycle, or contaminate the surface or groundwater through the use of pesticides, herbicides or fertilisers.

Mining

Wetlands may be significant areas for mineral deposits such as gold, as well as important sites for sand and peat mining.

Uniqueness

Some wetlands may be regarded as more valuable than others due to their location, size, species composition and other attributes that are locally or regionally significant.

4. Goal and Principles

The goal of the NSW Wetland Management Policy is the ecologically sustainable use, management and conservation of wetlands in NSW for the benefit of present and future generations.

The Policy aims to minimise any further loss or degradation of wetlands and where possible, restore degraded wetlands. To achieve its goal the Policy adopts the following nine principles for the sustainable management of wetlands:

Principle One

Water regimes needed to maintain or restore the physical, chemical and biological processes of wetlands will have formal recognition in water allocation and management plans.

Implications

The plants and animals that live in many wetlands are adapted to wet and dry cycles. Many of the chemical processes which support life in these wetlands are also triggered by alternating wet and dry periods. If these patterns are disturbed, the wetland may be degraded.

It is important, therefore, that dams, weirs, levees and barrages are managed to maintain the characteristics of the natural inundation regimes. In some areas of the State, this will mean that wetlands that are permanently flooded will be allowed to dry out, while in other areas, wetlands that are not currently receiving enough water will need to have their flooding and frequency restored as far as possible.

As consumptive water use from rivers increases, so does the need for formal recognition of wetland water flows if their values are to be sustained. This recognition has already happened in some regulated rivers of NSW Water provisions for wetlands should be of suitable size, quality and timing to maintain their natural values and biophysical functions. Improved management of water provisions will ensure the maintenance of instream and floodplain biodiversity.

Flows in coastal wetlands, particularly tidal flushing, and the resultant variations in salinity, also need to be maintained.

Outcomes

This aspect of the Policy attempts to return the water regime of wetlands, as far as possible, towards the natural regime.

The EPA is co-ordinating a process to establish water quality and river flow objectives for each catchment. Interim objectives will be initially developed taking

into account community preferences, current scientific knowledge and broad economic analysis. The Commissioner for Healthy Rivers will then undertake public inquiries for priority catchments involving detailed community consultation and further scientific and economic analysis.

The water quality and river flow objectives will be used by the Department of Land & Water Conservation to guide the preparation of Catchment Plans for their achievement.

In regulated rivers, as part of this process, the Department of Land and Water Conservation will establish a package of measures to protect wetland needs including:

- allocating water from storages to meet environmental contingencies (including wetlands);
- modifying unregulated flow management rules to protect wetlands' water needs;
- reviewing storage and river management operations to better address wetland inundation issues; and
- reviewing current water control structures to ensure better distribution of water within wetlands.

In some unregulated streams, restrictions may be necessary on the extraction and diversion of water at critical times to ensure that wetland health is maintained.

The Department of Land & Water Conservation will give explicit consideration to the needs of wetlands in their management of weirs, dams and floodgates.

Principle Two

Land use and management practices that maintain or rehabilitate wetland habitats and processes will be encouraged.

2.1 Guidelines to assist with the adoption of best practice for wetland management will be developed, trialled, evaluated and refined.

Implications

Wetlands have many intrinsic values such as their value for biodiversity conservation, filtering runoff and their aesthetics. Wetlands are also part of an interconnected unit within a wider landscape and, therefore, create benefits for the other surrounding landscapes, such as adjacent higher country. For these and other reasons, wetlands

have been recognised as being inherently valuable. Accordingly, they should be sustainably managed to conserve all their benefits.

Wetlands are used in many different ways. Some are grazed or cropped, some are mined for sand and peat, while others are used for harvesting (fish, yabbies, timber, ducks, etc) or for recreational purposes such as water skiing or fishing.

The quality of management of a wetland has a significant impact on the condition of the wetland environment and its capacity to carry out natural and resource use functions. Better management of wetlands can be achieved if managers have the correct technical knowledge to help guide their decision-making.

Outcomes

The Policy supports the ecologically sustainable use of wetlands by the adoption of best management practices including the active management of weeds, pests, access and fire. All uses and their risks must be carefully assessed, monitored and managed to ensure that the values of wetlands are not degraded. It may be necessary to limit recreational use, agricultural use or mining access in certain wetlands or at certain times to prevent damage to wetlands.

It will be the role of State Government agencies to provide technical advice on best management practice for wetlands and ensure that a consistent Government approach is adopted.

As part of implementing this aspect of the Policy, a technical wetland management manual and associated advisory notes will be produced by the Department of Land & Water Conservation. It will identify the range of wetlands found within NSW and detail best management practices. A set of regional guidelines will be produced to help account for the major regional differences.

2.2 Water and land management plans and strategies will give explicit consideration to wetland management.

Implications

A wide range of documents has been developed to assist in the management of natural resources. These include wetland, estuary, catchment management, habitat protection and farm plans. They can also include planning instruments, such as Development Control Plans, and Local, Regional and State Environmental Plans.

While water regimes are important, many other issues also affect wetland health. These include pest plant and animal control, grazing, maintenance of buffer strips and rehabilitation of wetland vegetation. These issues should be addressed in the full range of water and land management plans and strategies.

Outcomes

The Policy requires that explicit consideration of wetland water needs be given in water and land management plans and strategies (refer to Principle 1). This principle requires consideration of a wider range of wetland issues in plans and strategies.

New management plans and strategies for natural resources, being prepared by a variety of Government agencies and Catchment Management Committees, will also give explicit consideration to wetland needs from both a land and water perspective.

Principle Three

New developments will require allowance for suitable water distribution to and from wetlands.

Implications

Water often drains over the surface or through the ground in the local catchment. Subdivisions, farms, highways and other development in a wetland's catchment must he carefully planned and managed to maintain local drainage patterns. In some cases, water may be diverted away from the wetland. Many developments will have no (or negligible) impact on wetlands, but in some areas, the location of culverts, drains and paved surfaces will need to be carefully considered.

Suitable water distribution will vary depending on the wetland type.

Outcomes

The implementation of this aspect of the Policy will be achieved by the Department of Land & Water Conservation and the Department of Urban Affairs and Planning by actively encouraging local government to incorporate wetland management provisions into their local planning instruments and management practices. An example may be giving special consideration to maintaining natural water distribution patterns to and from wetlands when approving the construction of structures such as levees, block banks and drains.

Where possible, improvements in water distribution to wetlands from existing developments will be encouraged by the Department of Land & Water Conservation.

Principle Four

Water entering natural wetlands will be of sufficient quality so as not to degrade the wetlands.

4.1 The sources and pathways of pollution will be managed as far as possible to prevent the degradation of wetlands.

Implications

Although wetlands are natural filters of water (removing sediments and nutrients), excessive amounts of pollutants or poor quality water will degrade them.

Septic tanks, sewage treatment plants, feedlots, factories, land disposal areas and other point sources of pollution must be designed and managed to minimise the discharge or movement of contaminated water into wetlands. The runoff from towns, cities, logged areas and farms may also contain toxic substances and high levels of nutrients. If these flow or seep into the groundwater feeding into wetlands, they can also cause problems such as eutrophication or excessive plant growth. Increased salinity and turbidity can also alter the composition of vegetation affecting the habitat of many other dependant species.

Outcomes

Through incentive schemes and the provision of technical advice, land holders will be assisted by the Department of Land & Water Conservation in their efforts to minimise pollution of wetlands. Useful measures include retention or planting of vegetated buffers around wetlands and their feeder watercourses to help minimise the amount of pollution received by a wetland, as well as the location of stormwater retention basins upstream from existing natural wetlands.

The EPA will continue to combat the causes of pollution by assessing and managing the impact of both point source and diffuse source pollution. Other agencies, such as NSW Agriculture in association with Catchment Management Committees, will encourage and require better land and water use practices.

4.2 The needs of wetlands will be taken into consideration in the determination and implementation of water quality targets.

Implications

The goal of the National Water Quality Management Strategy (ARMCANZ & ANZECC 1994) is "to achieve sustainable use of the nation ~s water resources by protecting and enhancing their quality while maintaining economic and social development".

These guidelines indicate levels of contamination acceptable for nominated water quality objectives such as: the protection of aquatic ecosystems; recreational and aesthetic uses; provision of drinking water; and agricultural and industrial uses. However, the standards are modelled on those required for free flowing waters and will need to be modified to make them applicable to stationary water bodies such as wetlands.

The process for water quality management is based on the implementation of national guidelines at State, regional and local levels.

Outcomes

The water quality needs of wetlands will be considered as part of the water quality and river flow objective setting process being coordinated by the EPA.

The Department of Land & Water Conservation will be responsible for preparing Catchment Plans to ensure the implementation of the objectives.

The process will recognise that standards for free flowing waters will be different to stationary water bodies such as wetlands and will require the development of appropriate alternate standards.

Principle Five

The construction of purpose-built wetlands on the site of viable natural ones will be discouraged.

Implications

Constructed wetlands are increasingly being used as a means of waste water treatment in New South Wales. They have the advantage of being able to fulfil other objectives in addition to pollution control such as providing wildlife habitat, aesthetic, recreational and educational value, though these benefits may be periodically interrupted when constructed wetlands are harvested.

While constructed wetlands fulfil an important role in improving water quality, they cannot replace all the values of natural wetlands. For this reason, they should be seen as enhancing existing wetland systems, not replacing them.

Outcomes

This principle requires that the sites of natural wetlands are identified prior to building a constructed wetland. Best practice guidelines, developed as part of this Policy by the Department of Land & Water Conservation for local government, land holders and other decision makers, will cover identification of natural wetlands and advise on the appropriate location of constructed wetlands (ideally upstream of existing ones).

Principle Six

Natural wetlands should not be destroyed, but when social or economic imperatives require it, the rehabilitation or construction of a wetland should be required.

Implications

A compensatory wetland is unlikely to fulfil all the roles of a natural wetland. This principle will ensure that the full cost of wetland destruction will be considered up front in any new development proposal.

Outcomes

Where a project is deemed to be overwhelmingly in the public interest and no feasible alternative exists to the destruction or degradation of a natural wetland, the Policy requires compensation. This will preferably be the rehabilitation of a degraded natural wetland or the construction, ongoing maintenance and monitoring of a compensatory wetland. This will help to maintain regional biodiversity, habitat and catchment functions.

A technical reference group will develop guidelines regarding the requirements for a rehabilitation program and/or compensatory wetland. This will be administered by the relevant determining authority such as the Department of Urban Affairs and Planning, NSW Fisheries or the Department of Land & Water Conservation.

Principle Seven

Degraded wetlands and their habitats and processes will be actively rehabilitated as far as is practical.

Implications

Many wetlands are currently in urgent need of restoration if their full range of values are to be maintained. Rehabilitation of any ecosystem must deal with the cause of the degradation and not just the symptoms.

In the case of wetlands, restoring the original hydrological cycle is often the crucial factor. Additional measures, such as re-establishing vegetation, can be achieved by regeneration (eg by reducing grazing pressure) supplemented with re-planting. The control of pest plants and animals should also be made a priority. The re-establishment of past fire regimes may also become a key tool in the successful rehabilitation of a wetland and its long-term management.

The experiences of ongoing restoration projects have confirmed that successful regeneration requires the incorporation of all these approaches.

The complexity of wetland restoration and the variable results achieved thus far emphasise the need for ongoing monitoring of restoration projects and regular reporting of results. In this way, new restoration projects can benefit from past experiences.

Outcomes

The Policy supports restoration projects that involve the community and government working together. The NSW Government will provide technical advice and financial assistance for such projects. A funding program for community-based rehabilitation of wetlands will continue to be supported by this Policy and administered by the Department of Land & Water Conservation (refer to Principle 9).

The water quality and river flow objective setting process being coordinated by the EPA will also have an important role to play in the implementation of this Principle. Priorities and criteria for wetland restoration projects will be articulated in the Wetland Action Plan and reviewed annually.

Principle Eight

Wetlands of regional or national significance will be conserved.

8.1 Wetlands of regional or national significance will be accorded special protection.

Implications

Wetlands provide homes for a wide range of native plant and animal species, many of which occur only in wetlands. Many species of plants and animals have become extinct in NSW during the last two centuries and many others are threatened with extinction.

Wetlands could be significant on natural or cultural grounds. Criteria for significance could include:

- *use by migratory water bird species;*
- *presence of threatened species;*
- *good example of a wetland characteristic of a particular region;*
- *unusual in terms of its bio-geographical location;*
- *habitat of plants or animals at a critical stage of their biological cycle; or*
- *contains sites of significance for Aboriginal communities.*

Outcomes

All wetlands are recognised by this Policy as being important. The Policy does, however, acknowledge that some wetlands are regionally or nationally significant for either natural or cultural heritage reasons and should be accorded special protection by the NSW National Parks and Wildlife Service in conjunction with the relevant State and Commonwealth agencies.

This protection could take the form of increased management, incorporation in habitat protection plans, and restrictions on use or formal inclusion in the reserve system.

8.2 Research into the identification and function of wetlands of regional or national significance should be conducted to allow for the effective conservation of biodiversity.

Implications

Sustainable management includes preserving the biodiversity and integrity of ecological systems. The ecological systems of which wetlands are a component may extend over wide areas, well beyond the wetland boundaries. Further research is needed to better understand the complex roles of wetlands, both as individual units in the landscape and within an inter-connected system.

Outcomes

The identification of significant wetlands requires an understanding of the important wetland processes within different wetland types.

The Policy supports ongoing co-ordinated research into the type and role of the State's wetlands to help identify, document and understand the requirements of wetlands in need of special protection or possessing special values. The Wetland Action Plan will outline State wetland research priorities, and will be reviewed annually.

8.3 Representation of all wetland types within the reserve system will be secured to conserve biodiversity.

Implications

In any reserve system, different types of reserves are necessary as areas may be significant at different levels. For example, although a wetland may be locally significant, its type may already be well represented regionally or at a State or national level.

The Ramsar Convention aims to conserve important wetlands at an international level by encouraging the adoption of appropriate management regimes.

Within NSW there are various reserve systems whereby land is set aside to conserve its natural characteristics. Such reserves include National Parks, Flora Reserves within State Forests, Nature Reserves, Council Reserves, Wildlife Refuges, Aquatic Reserves and Marine and Estuarine Protected Areas.

Outcomes

As part of the implementation of this aspect of the policy, the NSW National Parks and Wildlife Service will continue to work towards the mapping of all wetlands and the inclusion of a representative sample of wetlands within the reserve system.

The reservation of wetlands will be linked to broader conservation goals for all ecosystems.
The NSW National Parks and Wildlife Service will develop management plans for all reserved wetlands.

Principle Nine

The adoption of a stewardship ethos and co-operative action between land and water owners and managers, government authorities, non-government agencies, and the general community is necessary for effective wetland management.

9.1 Community involvement in managing and rehabilitating wetlands will be promoted and supported by providing technical and financial assistance.

Implications

People often have the motivation to manage wetlands wisely, but sometimes lack the knowledge, skills and organisational support to do so. Much of the information which can assist wetland management is not very accessible to wetland managers or owners. Co-operative action between all parties, therefore, is most effective.

While local councils and Government agencies have an important role to play in wetland management, in many cases, it is the people who live near wetlands and are concerned about them who can provide effective action. An important role of government is to give the community and in particular wetland owners, the support and encouragement needed.

Outcomes

As part of the implementation of the Policy, technical and financial support will be provided by the Department of Land & Water Conservation. This support will complement existing nationwide programs, such as the Natural Resource Management Strategy in the Murray-Darling Basin, National Landcare Program and National Wetlands Program.

The Policy will ensure that full public consultation occurs in the development and implementation of all wetland policies and management plans.

The Department of Land & Water Conservation will continue to develop a Geographic Information System (GIS) for wetlands throughout the State including a community-based user system compatible with the Sydney Water GIS for wetlands found in the Sydney, Illawarra and Blue Mountains regions. The National Parks and

Wildlife Service is also establishing a wetland database for the Murray-Darling Basin, covering about 15,000 wetlands.

9.2 Education and awareness of the values and functions of wetlands and their management will be promoted.

Implications

When people appreciate the value of wetlands, they care about what happens to them. If they also realise how their actions may impact on a wetland, they are likely to change the way they act to minimise their impact.

Achieving better wetland management requires that land managers, regulatory authorities and the community better understand wetland values and management practices.

The wetland exhibit at Taronga Zoo, for example, seeks to educate the public about wetlands and the need for their conservation. Two wetland systems have been recreated and stocked with a variety of water birds such as the Jabiru, Brolga and Pelican.

Outcomes

As part of the implementation of the Policy, educational materials will be prepared by the Department of Land & Water Conservation. This will include school materials for Years 5-8 and field activities as part of Streamwatch, and the provision of information to land holders through Landcare and existing publications, such as Agfacts.

To support this Policy, a collation of scientific literature that defines the importance of wetland functions and values will be prepared.

9.3 The development of a sound scientific understanding of the physical, chemical and biological processes in wetlands will be promoted.

Implications

Wetlands cannot be managed sustainably unless there is an understanding of how they function. Yet many wetland processes are only poorly understood, hence the need for ongoing research into the physical, chemical and biological processes of wetlands. This research will be supplemented with knowledge arising from ongoing wetland management and monitoring.

Outcomes

Implementation of this aspect of the Policy will include the ongoing monitoring of wetlands and research into wetland processes by NSW National Parks and Wildlife

Service, NSW Fisheries, NSW Agriculture and the Department of Land & Water Conservation

Assessment of wetland management requires the development of performance indicators. These will be produced as part of the implementation of the Wetland Action Plan.

The Policy will establish a coordinated monitoring program and report on the status of wetlands every two years in the State of the Environment Reports prepared by the EPA

5. How should the Policy be Implemented?

The principles adopted in this policy will be used to guide decision-making by the NSW Government in its activities and decisions affecting wetland management and protection -such as water allocation, works on floodplains, cropping and clearing in or near wetlands and land use planning.

Implementation of the Policy will occur within the TCM Framework and be overseen by the State Catchment Management Co-ordinating Committee which reports to the Minister for Land and Water Conservation. A sub-committee will be formed with representation from the relevant Government agencies, industry and community groups to prepare and annually review a Wetland Action Plan. The Wetland Action Plan will detail priority areas for wetland work including community based projects and Government activities such as wetland research, monitoring, management and planning.

The Policy allows for the convening of technical reference groups to deal with issues of a technical nature such as the preparation of guidelines. The membership of the group will vary according to the issue at hand because of the difficulty in being an 'expert' in all wetland areas given the great diversity of wetlands, for example between the management of coastal and inland wetlands.

The Policy will also provide support to the community. The Department of Land & Water Conservation will provide financial and technical assistance to land holders and the wider community for projects which aim to maintain, restore and monitor wetland environments.

Projects eligible for funding include:

- support for community involvement in the preparation and implementation of wetland management plans and regional wetland strategies;
- establishment of sites to demonstrate best management practices; and
- community awareness and education.

The Government will undertake full community consultation and socio-economic analysis if any new regulations are proposed as part of the Policy's implementation.

The following actions will be undertaken by the Government to implement the NSW Wetlands Management Policy. This is an indicative list only and the actions listed will complement other on-going activities that, while not always specifically directed at wetland management, will help fulfil the principles contained in this Policy.

Θ Best practice guidelines

Develop a series of best practice guidelines for wetland management. These guidelines will flow from a **technical wetlands management manual** which will identify the different types of wetlands found in NSW, describing the hydrological,

hydrogeological, chemical and biological characteristics and tailor best management practice guidelines most suitable to each wetland type. Guidelines will be produced for:

- **Local Government Authorities** on wetland identification and development considerations;
- Wetland restoration projects; and
- Land holders on management of different wetland types.

These will be supported by research into the **costs and benefits of wetland best management practices** for different rural industry sectors.

Θ Financial and technical assistance for community groups

Continue to provide support for **community** wetland rehabilitation, management and awareness activities.

Establish a **wetlands GIS user group** to make mapping and related information readily available to the community.

Θ Education and training

Develop **educational material** for school children (Years 5-8) including a poster, accompanying class exercises and **Streamwatch** field activities.

Provide training programs on wetland identification and management to government licensing, field and extension officers on an ongoing basis.

Θ Environmental Flows

Implement a comprehensive package of **environmental flow provisions** in each regulated valley of NSW that takes into account the requirements of riverine wetlands. These provisions are to include controls on unregulated flow extraction, environmental contingency allowances and review of weirs and river operation practices.

Θ Ramsar Convention and conservation

Continue the process of identifying suitable sites and negotiating their nomination under the **Ramsar** Convention.

Voluntary Conservation Agreements between land holders and NSW National Parks and Wildlife Service will continue to play a significant role in this and other conservation orientated programs.

Continue development of a **representative reserve system** for wetlands in NSW. This will be linked to broader conservation goals for all ecosystem types.

- **Wetland Rehabilitation**

Continue to identify degraded wetlands and the processes that have led to that degradation.

Initiate projects to rehabilitate degraded wetlands. These projects will be monitored, the results reported and used to update guidelines on rehabilitation practices.

- **Groundwater Policy**

Prepare a policy on Groundwater Protection for Dependent Ecosystems that addresses the needs of groundwater dependent wetlands.

- **Research**

Institute a prioritised research program to better understand wetland water needs, restoration approaches, management and reservations.

- **Reporting and monitoring**

Establish a co-ordinated wetland monitoring program and report on the status of wetlands in NSW every two years in the State of the Environment Reports. Recommendations for improved management flowing from these reports will be incorporated in the State of the Rivers and Estuaries reporting process.

- **Co-ordinated Actions**

Ensure that a consistent and co-ordinated approach is adopted by State Government agencies in relation to wetland management, in particular in their provision of advice to land holders.

Ensure that State agencies give priority to the preparation of management plans for wetlands or wetland complexes in partnership with catchment and estuary management committees and the community by establishing and monitoring progress on a State-wide list of priorities.

6. Contacts

Contact your local Department of Land & Water Conservation office for advice on the identification and management of wetlands and referral to the most appropriate agency.

7. References

Agricultural and Resource Management Council of Australia and New Zealand, and Australian and New Zealand Environment and Conservation Council (ARMCANZ & ANZECC) (April 1994). *National Water Quality Management Strategy - Water Quality Management - an outline of the policies*.

Commonwealth of Australia (December 1992) *National Strategy for Ecologically Sustainable Development*

Council of Australian Governments (COAG) February 1994)) *Water Resources Policy. Council of Australian Governments Communiqué*. Report of the Working Group on Water Resource Policy.

World Commission on Environment and Development (WCED) (1987) *Our Common Future* - The Brundtland Report.

8. Acronyms

ANZECC	Australian and New Zealand Environment and Conservation Council
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
CAMBA	China-Australia Migratory Birds Agreement (1986)
COAG	Council of Australian Governments
CSIRO	Commonwealth Scientific and Industrial Research Organisation
EPA	NSW Environment Protection Authority
GIS	Geographic Information System
IGAE	Inter-governmental Agreement on the Environment
JAMBA	Japan-Australia Migratory Birds Agreement (1974)
Ramsar	Convention on Wetlands of International Importance Especially as Habitat for Water Birds
SCMCC	State Catchment Management Co-ordinating Committee
SEPP	State Environmental Planning Policy
SR&EP	NSW State Rivers and Estuaries Policy
TCM	Total Catchment Management
WCED	World Commission on Environment and Development