

# Cooks River Catchment Management Strategy



Cooks River Catchment  
Management Committee  
December 1999



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# FOREWORD

The environmental problems of the Cooks River are almost legendary. Almost everyone has a tale to tell about the river. In many ways the river is emblematic of the state of Sydney's environment. All the mistakes of the past are on display along its length.

This strategy reflects the desire of the community to correct those mistakes and repair the damage that has occurred to the Cooks River and the many creeks in its catchment.

This strategy follows the completion of the actions contained in the Cooks River CMC's 1993 Strategic Plan. It builds on the actions completed under the 1993 Plan and seeks to complement the now very comprehensive planning framework for the catchment, including the Cooks River Foreshores Strategy and the Cooks River Stormwater Management Plan.

There is every reason to be confident that most, if not all of the actions set out in this Strategy can be carried out in the not too distant future. The level of commitment that now exists in the community and in government to work in very practical ways to improve the river is higher than it has ever been.

This Strategy is largely a result of that commitment as expressed by the wide range of environment and other community groups, and State and Local government authorities represented on the Catchment Management Committee.

The Cooks River Catchment Management Committee will continue to work for the community and with government to improve the quality of the Cooks River catchment and contribute to making south-western Sydney a better place to live.

Cr Phil Morgans  
Chairperson of the Cooks River Catchment Management Committee

# INTRODUCTION

## 1.1 THE COOKS RIVER CATCHMENT

The Cooks River is one of the smallest rivers in NSW but has one of the highest population densities. Therefore, human activities have had, and continue to have, a significant effect on the river.

The Cooks River drains a catchment of just over 100km<sup>2</sup> in the inner south western suburbs of Sydney (Figure 1). The river begins as a small watercourse near Chullora Railway Workshops and flows some 23km in a generally easterly direction to enter Botany Bay just south of the Kingsford Smith Airport.



Figure 1: Cooks River Locality Map

On the way, it is joined by a number of tributaries, the most important being Cox's Creek, which drains the Punchbowl area, Cup and Saucer Creek, which enters near Canterbury, Wollie Creek, which begins in Beverly Hills, and Sheas Creek, which drains the Alexandria area and enters the Cooks River via the Alexandra Canal (Figure 2).

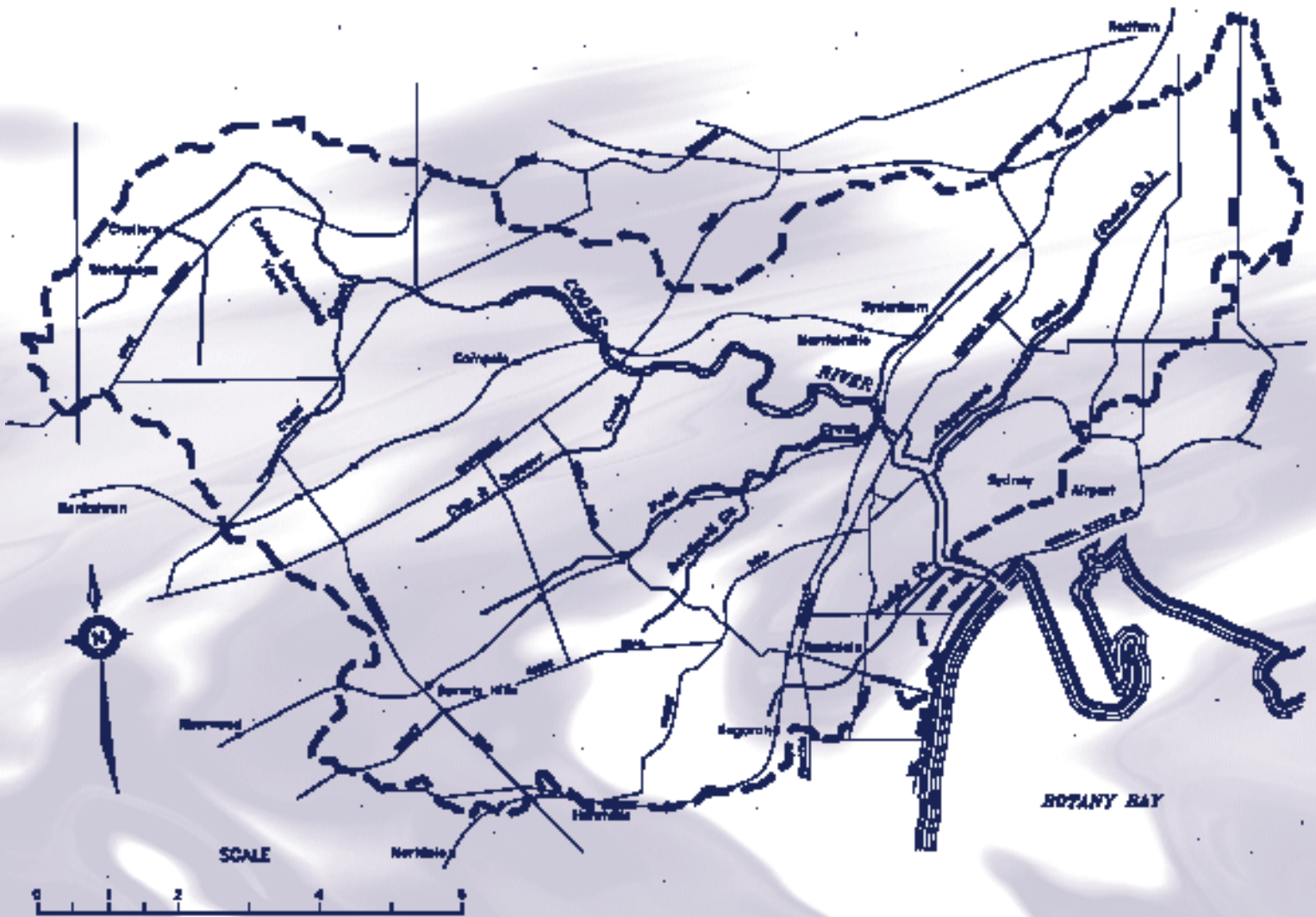


Figure 2: Cooks River Catchment



The majority of the catchment is highly developed, so the remnant bushland and surrounding modified areas are regionally important. They have significant diversity and support an abundance of native fauna. Major areas of bushland are found in the Wollie Creek Regional Park (45 hectares), Bardwell Valley Parklands (see Figure 3) and Stotts Reserve (11 hectares), Leo Smith Reserve (4 hectares) and the Freshwater Creek Bushland at Chullora (area of bushland unknown due to on-going clearing by National Rail). These contain valuable areas of good and potentially good bushland. However, for most of its length the river is flanked by parkland and open space, which is unusual among urban watercourses.



Figure 3: Bardwell Valley Parklands

## 1.2 Native Flora and Fauna

A brief summary of native flora and fauna is given here. Readers are referred to the Cooks River Foreshores Strategic Plan (Clouston, 1997) for a more in-depth discussion, as well as the references shown.

### ***Aquatic Flora and Fauna***

Studies of fish and macroinvertebrate communities within the Cooks River show a limited diversity of aquatic species. Species recorded are dominated by polychaetes and molluscs, known to be tolerant of highly contaminated river systems. Fish species found in the river include mullet, eel, galaxias and gobies, all of which are characteristic of polluted waterways (SWC, 1998).

Species diversity is highest within the tidally influenced sections of the river and rapidly declines with distance upstream (TEC, 1976). Surveys of aquatic fauna show that the mouth of the river and its lower reaches have a much greater species diversity than habitats further upstream (TEC, 1976).

Prior to European settlement, the fish and shellfish caught in the Cooks River supported local Aboriginal communities (TEC, 1995a). Today, all forms of commercial fishing are banned in the Cooks River due to toxicants which accumulate within the fish and represent a health risk to consumers. A technical report by the Central Sydney Area Health Service (CSAHU, 1997) concluded that the taking of fish, shellfish and crustaceans from the Cooks River should be banned for both recreational and commercial operators. Currently, under the Fisheries Management Act, 1994, it is still permissible for recreational fishers to catch fish by the use of rod or handline (CSAHU, 1997) such as shown in Figure 4.



Figure 4: Recreational fishing is still enjoyed by people in the Cooks River Catchment despite the banning of commercial fishing due to contamination.

### **Wetlands**

The Cooks River catchment contains a number of wetlands that are considered to be regionally significant owing to their limited distribution and fragmented state. These wetlands offer locally valuable habitat for native fauna including birds, mammals, fish, reptiles, amphibians, insects and other invertebrates. The major wetlands within the Cooks River Catchment are the Rockdale Wetlands, the Eve Street Wetlands (Arncliffe) and the Wolli Creek Wetlands (PPK, 1999). There is also a waterhole adjacent to the Cooks River off Dibble Avenue, Dulwich Hill which has been used for many years as a haven for several wetland bird species (TEC, 1995a).

### **Mangroves**

In the Wolli Creek Wetlands, the mangrove area has increased rapidly over the last twenty years and is likely to continue to expand its range (Brown *et al*, 1988a). At present around 2.4 hectares of mangroves now cover Wolli Creek's tidal plain adjacent to Bayview Avenue, Turrella. A study of macroinvertebrate fauna of the Wolli Creek conducted by Brown *et al* (1988b), found the number of arthropod species to be far greater than that reported ten years earlier in 1978.

### **Riparian and Foreshore Flora and Fauna**

The native flora and fauna of the Cooks River valley survive in small remnants of the original vegetation which occur primarily in open space and parkland areas along the foreshores of the River. The remaining bushland and foreshore vegetation remnants are considered to be of high ecological value and important for conservation of biodiversity within the region (TEC, 1995a). Some of these remnant bushland areas are described below.



### **COOKS RIVER CLAY PLAIN SCRUB FOREST REMNANTS**

A remnant of the original clay-soil bushland, which was once widespread, remains along Freshwater Creek within the Chullora Railway Yards. This three hectares area of remnant vegetation, known as the Cooks River Clay Plain Scrub Forest, is classified as an endangered ecological community and protected under the NSW Threatened Species Conservation Act, 1995. The Bankstown Bushland Society has been enhancing the value of this remnant through a bush regeneration programme, however it is now part of a redevelopment programme by National Rail and clearing of parts of this bushland has occurred (PPK, 1999).

A site at the end of Third Avenue, Campsie, also supports an isolated, small remnant of Cooks River Clay Plain Scrub Forest. The site occupies about 0.5 hectares between the Cooks River and its junction with a small stormwater canal (TEC, 1995a). The remnant vegetation at this site has scientific and natural heritage significance (TEC, 1995a).

A third remnant of this endangered ecological community, known as Cox's Creek Bushland, is located on the southern side of the Hume Highway, in Greenacre. The bushland can be accessed via a laneway located at the junction of Sylvanus and Drone Streets, Greenacre. This small reserve, with a tributary of the Cox's Creek traversing it from under Robert's Road, adjoins the Finemores Depot and the old Bankstown Sanitary Depot (which is to become a refrigerated warehouse facility). Bankstown Council is going to retain a 25m buffer zone along the eastern side of this land and a similar buffer zone along the southern boundary. The Reserve is managed, however, by Strathfield Council, as it is located in the Strathfield municipality.

Further remnants may be found along the River at Hedges Avenue in Freshwater Park.

### **WOLLI CREEK REGIONAL PARK**

The Wollie Creek valley supports a diversity of natural environments, including mangroves, heaths, eucalypt forests, wetlands and a pocket of coachwood-watergum rainforest (TEC, 1995a). This area was declared a Regional Park by the Premier of NSW in early 1999. A Plan of Management is being prepared for the Regional Park and is expected to be completed by November, 1999.

### **BARDWELL VALLEY PARKLANDS**

Bardwell Valley contains open woodlands of *Angophora costata*, *Eucalyptus piperita*, Turpentine and Lilly Pilly, shrubland and rare heath.

### **STOTTS RESERVE**

With its stands of Blackbutt, *Eucalyptus saligna* (Blue Gum) and Scribbly Gum, Stotts Reserve provides an important wildlife corridor between the bushlands of Bardwell Valley and Wollie Creek.

### **Terrestrial Fauna**

Terrestrial fauna species that use the Cooks River catchment as habitat include a variety of birds (such as Superb Fairy-wrens and New Holland Honeyeaters), Grey-headed Flying-Fox, Common Brushtail Possums, the Eastern Bush Rat (*Rattus fuscipes*), bats, lizards (such as the Common Blue Tongue) and frogs (such as the Striped Marsh Frog, the Common Froglet and the Green and Golden Bell Frog) (PPK, 1999).

The Green and Golden Bell Frog is a species of state significance; it is listed as endangered under the Threatened Species Conservation Act, 1995. The species has been found at the Enfield Marshalling Yards, Cox's Creek Reserve, Eve Street Wetlands, and the Rockdale Wetlands (PPK, 1999).

One of the breeding sites for the Green and Golden Bell Frog is the old brick pit located at the rear of houses in Wentworth Street. This site has recently been sold, and the new owners intend to have the site filled. New ponds are, however, to be provided for the frogs.



### 1.3 People of the Catchment

About 400,000 people inhabit the Cooks River catchment which comprises over 130,000 dwellings and more than 100,000 commercial and industrial premises. The catchment includes parts of 13 local government areas (see Section 2.5).

Aboriginal clans of the Cooks River Catchment include the Cadigal, Wangal, Kameygal and Bediagal. These were clans of the Darug people. Evidence of Aboriginal occupation in the catchment can be seen in middens along the Cooks River and from material excavated from the Alexandra Canal in the 1960's (Marrickville Council, 1999).

### 1.4 Land Use

The Cooks River Catchment is host to a variety of land uses, ranging from industrial to open space. A comprehensive account of land uses and pollution sources is given in the Cooks River Catchment Pollution Source Inventory (CRCMC, 1997). The existing land zonings are discussed below.

#### ***Residential Land Use***

Residential land use is the predominant zoning within the catchment with the highest portion of residential developments being detached low-density dwellings. Within the past decade there has been an increased level of medium to high-density residential developments, particularly in Canterbury, South Sydney and Marrickville local government areas.

#### ***Industrial Land Use***

The major portion of industrially zoned land is concentrated in the Port Botany area, along Alexandra Canal, within Tempe, and in the southern portion of the Strathfield local government area. Industrial developments also occur along both the East Hills and the South Coast railway lines and Canterbury Road.

#### ***Open Space and Recreation Land Use***

A thin corridor of open space fringing the Cooks River, Cox's Creek, Wolli, Bardwell and Freshwater Creeks has survived development pressures as a result of hilly topography and poor soil. This corridor constitutes a significant portion of the open space in the Cooks River catchment. The foreshores of Muddy Creek, Alexandra Canal, Shea's Creek and Cup and Saucer Creek are more developed with less open space.

A portion of this significant open space corridor is owned by State authorities, including Sydney Water, Department of Public Works and Services, Department of Land and Water Conservation, Department of Urban Affairs and Planning, and the Roads and Traffic Authority. The State-owned lands along the south bank of Cooks River and Wolli Creek, which has now been declared the Wolli Creek Regional Park, are used by the community for passive recreation and contain remnants of natural bushland (CRCMC 1993). The Rockdale Wetlands and Bardwell Valley are also areas used for passive recreation. Many of these areas, such as Richardson's Lookout in Marrickville (Figure 5), have recently been upgraded.



Figure 5: Richardson's Lookout at Marrickville is a recreational area which was upgraded in May, 1999.

### **Transport Land Use**

The Cooks River catchment contains some major national and state highways, railway corridors and Sydney's airport. Major roads in the catchment include the Hume Highway, Princes Highway, and General Holmes Drive. Four rail lines occur within the catchment area: East Hills, Bankstown, Illawarra and Botany. In addition, three major rail service areas occur: the Enfield Marshalling Yards in Strathfield, the Chullora Railway Workshops in Bankstown, and the Eveleigh Railway Workshops in the South Sydney Council area. Sydney (Kingsford-Smith) Airport, which covers approximately 660 hectares of reclaimed land, also lies within the catchment.

## **1.5 Update Since 1993 Strategic Plan**

In the six years since the last Cooks River Catchment Management Strategy was launched, documents such as the Cooks River Foreshores Strategic Plan (Clouston, 1997) and the Pollution Source Inventory (CRCMC, 1997) have been completed. The Cooks River Foreshores Strategic Plan was prepared for the Cooks River Regional Working Party (Marrickville Council, Strathfield Municipal Council, Canterbury City Council, CRCMC, EPA, DLWC and Greening Australia) to focus on strategies to ensure the River foreshores are managed in a coordinated manner. The Pollution Source Inventory was prepared by the CRCMC as a summary of identified pollution sources in the catchment and a preliminary estimate of pollutant loads from each source.

Another document which is currently being developed is "Missing Jigsaw Pieces: The Bushplants of the Cooks River Valley" (Benson *et al*, in print) Other activities which have improved the environmental value of the Cooks River Catchment since 1993 are given below:

- In 1993, Sydney Water, in association with the local community, began restoration works on a section now known as the Eve Street Wetlands in Arncliffe. This wetland now provides important refuge and feeding grounds for migratory birds and is considered of regional ecological value (Rockdale City Council, 1997–1998). The Eve Street Wetlands will, however, be impacted on by the development of the M5 East Motorway which is being constructed across the northern edge of the wetlands. The Motorway will reduce the habitat for wader birds. In an attempt to compensate for this loss of habitat, the RTA is proposing to move the nesting sites of the waders across Botany Bay to a site at Kurnell.



- Mangroves have been re-established along sections of the Cooks River and Muddy Creek, particularly in the vicinity of Steel and Kendrick Parks. Mangroves have been planted by Marrickville Council around Fatima Island
- Although there are no large areas of remnant indigenous vegetation in the Marrickville Council area, a number of trees along the Cooks River, including mangroves, fig and palm trees, have been recorded as significant in the Marrickville Heritage Study (Marrickville Council, 1994; TEC, 1995a)
- In recent years, efforts by local Councils, residents' groups, and the National Trust have assisted with the protection and enhancement of the Wolli Creek remnants area. The number of bird species found in this area has increased over the last twenty years, with current estimates of over 160 bird species (TEC, 1995b). Water birds include migratory bird species that have travelled from Japan and Siberia and are protected through international treaties (TEC, 1995b). This area has recently (March, 1999) been declared a Regional Park by the Premier of NSW
- Volunteer groups and the National Trust are active in Bardwell Valley, Stotts Reserve, Leo Smith Reserve and volunteers also work in Freshwater Creek bush at Chullora, the headlands of Cooks River (within the area owned by National Rail)
- Implementation of a "Kids, Companies and Creeks" Environmental Education and Awareness Programme by the Cooks River Catchment Management Committee
- Cooks River Festival held annually
- Cooks River Catchment Management Committee Website set up
- Remediation of ex-landfill site by South Sydney Council into a park with wetlands
- Various groups, such as Cooks River Foreshores Working Group, have obtained funding through the National Heritage Trust funding programme and/or Cooks River Catchment Management Committee funding
- The various councils in the catchment have also developed and implemented a number of programmes aimed at enhancing and/or restoring environmental values. Details of these can be found in the councils' State of the Environment Reports (see Reference section).

# GUIDING PRINCIPLES, LEGISLATION AND POLICIES

The central theme of this Strategic Plan is the achievement of ecologically sustainable development (ESD) in order to protect and enhance biodiversity. The principle of Total Catchment Management has also been used in the development of this Strategic Plan.

## 2.1 Ecologically Sustainable Development (ESD)

The aim of ecological sustainability is to meet present requirements without compromising the ability of future generations to meet their own requirements.

The guiding principles of ESD as agreed to by the Council of Australian Governments (COAG) (1992) are:

- Decision-making processes should effectively integrate both long and short term economic, environmental, social and equity considerations
- 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 (the precautionary principle)
- The global dimension of environmental impacts of actions and policies should be recognised and considered
- The need to develop a strong, growing and diversified economy which can enhance the capacity for environmental protection should be promoted
- Cost-effective and flexible policy instruments should be adopted, such as improved valuation, pricing and incentive mechanisms; decisions and actions should provide for broad community involvement on issues which affect them (EPA, 1997).

ESD can be achieved through implementation of the precautionary principle, intergenerational equity (future generations should not have to pay for environmental degradation caused by previous generations), the conservation of biological diversity and ecological integrity, and improved valuation and pricing of environmental resources. ESD should be considered in the decision-making process to ensure the effective integration of economic and environmental considerations.

The Local Government Amendment (Ecologically Sustainable Development) Act, 1997, amended the Local Government Act, 1993, to ensure councils would consider the principles of ESD in their planning processes.

## 2.2 Total Catchment Management (TCM)

The NSW Government formalised a TCM Policy in 1984. An operational and legislative framework for TCM was created by the passing of the Catchment Management Act in 1989. TCM has bipartisan support.

The Catchment Management Act, 1989 defines TCM as:

“The coordinated and sustainable use of land, water, vegetation and other natural resources on a catchment basis so as to balance resource utilisation and conservation.”

The objectives of the Act are to:

- (a) coordinate policies, programmes and activities as they relate to TCM
- (b) achieve active community participation in natural resource management
- (c) identify and rectify natural resource degradation



(d) promote the sustainable use of natural resources and provide stable and productive soil, high quality water and protective and productive vegetation cover within each of the State's water catchments.

In order to achieve these objectives, the Act:

- (a) provides for a network of Catchment Management Committees, coordinated by a State Catchment Management Coordinating Committee, and linking the government and the community to achieve the objectives of TCM; and
- (b) provides for Catchment Management Trusts to replace Catchment Management Committees in some situations in order to raise revenue for particular total catchment management purposes.

TCM is about providing management direction for a catchment and having everybody within a catchment consider the impacts of their activities on others and on the catchment itself. The important features of TCM that will assist in the sustainable use of resources are:

- Cooperation between governments, businesses and the community generally
- A coordinated approach to natural resource management
- Consideration of the impacts activities have on others
- Provision of a forum to resolve natural resource management conflicts
- An understanding of the ecosystems within the catchment
- Community identification of catchment issues and involvement in strategies to address the priorities
- Community access to government resources such as the National Landcare Programme (NLP) which enables implementation of community action.

An important component of TCM is community involvement. Neighbours may come together as a group to tackle a common local issue (e.g. landcare groups) or may provide representatives to a Catchment Management Committee which has a broader catchment perspective. Groups established to address catchment management issues are eligible for assistance to implement their actions through competitive funding grants and technical assistance from government departments, such as the Department of Land and Water Conservation, NSW Agriculture, the EPA and Local Government.

There are four elements of TCM that require attention if the goals of managing for our future needs are to be achieved:

1. Look at the whole situation, as well as the parts
2. Involve all members of the community, including government and the general public
3. Cooperation between all parties
4. Plan for the future, as well as meet the needs of today

### ***Why We Need TCM***

A catchment is an area supplying surface water to a common watercourse. Each catchment is separated by hills or ridges which direct the flow of water. TCM provides a coordinated and cooperative approach which will help to develop the best management option for the sustainable use of our natural resources. Water quality is one of the commonest natural resource issues in a catchment. Other issues are biodiversity, land management and cultural heritage.

The benefits of a catchment approach to management are centred around cooperation and the increased effectiveness of working together. When a community identifies its issues and develops a cooperative plan to address them, then it is a powerful force in attracting support from government agencies, industries, education institutions and other communities with similar issues. Some of the specific benefits of a catchment approach are:

- A cooperative forum in which issues can be raised openly, plans can be made and issues resolved

- The integration of social and economic systems with the natural ecosystems and the use of natural resources
- The ability to attract financial and technical support from a wide range of sources for managing the natural resources of the catchment
- The efficient use of the catchment by sharing the expertise and resources already available
- More efficient integration of natural resource management services to the people of the catchment

Apart from improving the health and productivity of a catchment, TCM provides benefits to individuals through their involvement in the management of the catchment and their increased understanding of the need for all users to employ best management practices.

### ***Catchment Management Committees (CMCs)***

Catchment Management Committees are responsible for implementing TCM, ensuring a communication link between the government and the community while providing strategic direction for resource managers in the catchment. The Cooks River (CRCMC) was formed in 1991. CMCs are composed of representatives from various organisations, government bodies and the general public. A list of the members of the CRCMC and the organisation/interest they represent is given in Appendix A.

Each committee, or trust, decides on the actions needed to sustainably and equitably manage a catchment for the present and future benefit of the local community. These decisions are not made in isolation, but within the context of state laws and programmes. The different levels of plans and policies which guide natural resource management and some relevant national and state strategies, Acts and policies are set out below.

### ***Catchment Management Strategic Plans***

The actions agreed to by a CMC are incorporated into a TCM plan or strategy. Some of these actions are achieved voluntarily, with local communities and businesses conducting their business in a certain manner for the community's long term benefit. Other requirements are put into effect by the government bodies represented on the CMC. CMCs cannot, themselves, compel individuals or public authorities to do anything. However, Regional Environmental Plans (REPs) and Local Environmental Plans (LEPs) are legislative instruments that can be used to implement TCM plans and strategies.

Catchment strategies provide a framework for fostering cooperation and coordination between landholders and other resource users, community groups, local government and state agencies. Strategies recognise the complex interactions that exist within natural systems and the need for a coordinated, catchment-wide approach to address resource management issues. They establish a long-term vision for the future, acknowledging the importance of sustainability whilst recognising the need to integrate social, economic and environmental values.

Total Catchment Management and Planning provides a framework for the integrated implementation of:

1. The catchment-applicable parts of national and state level plans, strategies and policies
2. Plans with catchment-wide, or sub-catchment-wide, scopes, like regional and local plans, water management plans, and vegetation management plans.

## **2.3 National Policies and Strategies**

Environmental issues which have Australia-wide significance are addressed by national policies formulated by the Federal Government in cooperation with the States and Territories. Some national policies may be designed to help Australia meet its international obligations.



- Intergovernmental Agreement on the Environment (IGAE): defines and coordinates federal, state and territory governmental roles in environmental planning and management
- National Strategy for Ecologically Sustainable Development (ESD): sets out principles for economic development which provides for equity between generations, safeguards the welfare of future generations, protects biological diversity and maintains essential ecological processes and life support systems
- Council of Australian Governments (COAG) Framework for Water Reform: bases pricing and investment decisions on cost recovery, transparency and ecological sustainability. Clarifies water entitlements and allocations, including environmental allocations, and water trading. Separates management, standard setting and regulatory roles. Provides integrated catchment management approach to water issues, including local decision-making and community education and involvement. Promotes use of appropriate technologies
- National Strategy for the Conservation of Australia's Biological Diversity: sets out principles for the implementation of the effective identification, conservation and management of Australia's biological diversity (genetic, species and ecosystem)
- National Water Quality Strategy: provides guidelines for water quality management which: integrates economic and environmental goals in policies and activities; appropriately values environmental assets, providing equity within and between generations; deals cautiously with risk and irreversibility; and recognises global dimension of management decisions

Australia also has two international migratory bird agreements which are relevant to the Cooks River Catchment. These are the China Australia Migratory Bird Agreement (CAMBA) and the Japan Australia Migratory Bird Agreement (JAMBA). The wider recommendations of the Ramsar Convention also apply.

## 2.4 State Legislation, Policies and Plans

Under the Australian Constitution, the states are responsible for natural resource planning, legislation and decision-making. State natural resource policies and legislation provide a broad framework within which to consider individual developments and broader planning issues.

### *NSW Strategies*

- The State Strategy for Natural Resource Management pulls together actions identified in existing policies, regional catchment management strategies and other initiatives. The strategy describes in clear terms the specific actions, responsibilities, performance indicators and priorities needed to bring about sustainable natural resource management in New South Wales. The State Strategy helps to identify potential gaps and overlaps in proposed actions and will assist in establishing funding priorities for natural resource management projects
- Regional and statewide natural resource management strategies will form the blueprint for action at state, regional and local level and will focus on what the community and government can achieve when the actions of many individuals, groups and agencies are planned and coordinated. These strategies are flexible and dynamic to meet the requirements of a changing physical, economic and social environment.

### *State Catchment Management Coordinating Committee*

The objective of the State Catchment Management Coordinating Committee (SCMCC) is to provide a central coordinating mechanism for the purpose of TCM throughout New South Wales. The functions of the SCMCC are to:

- (a) Coordinate the implementation of TCM strategies
- (b) Monitor and evaluate the effectiveness of TCM strategies
- (c) Advise the responsible Minister or other Ministers on any aspect related to TCM

(d) Coordinate the functioning of CMCs and maintain liaison with Catchment Management Trusts

(e) Undertake any other functions relating to NSW TCM Legislation

The NSW Government is implementing the second stage of a two stage process to revamp environmental legislation with the commencement of the Protection of the Environment Operations Act, 1999. This Act replaces the Clean Waters Act, the Pollution Control Act, the Clean Air Act, the Noise Control Act, the Environmental Offences and Penalties Act and the regulatory components of the Waste Minimisation and Management Act. There are a number of other Acts relevant to natural resource management in NSW:

- Water Administration Act, 1986: vests control and management of NSW surface water and groundwater in the Minister for Land and Water Conservation
- Water Act, 1912: regulates extraction of surface water
- Crown Lands Act, 1989
- Fisheries and Oyster Farms Act, 1935
- Local Government Act, 1919
- Local Government Amendment Act, 1997
- National Parks and Wildlife Act, 1974
- Rivers and Foreshore Improvement Act, 1948: protects stability of banks and beds of rivers and lakes
- Native Vegetation Conservation Act, 1997: protects native vegetation
- Fisheries Management Act, 1994: protects fish and their habitats
- Threatened Species Conservation Act, 1995: protects threatened species, populations and ecological communities
- Environmental Planning and Assessment Act, 1979: regulates land use, through State Environmental Planning Policies (SEPPs), Regional Environmental Plans (REPs) and Local Environmental Plans (LEPs)
- Catchment Management Act, 1989: provides a framework for community and government partnership in natural resource management. Provides context for catchment management policies

### ***NSW Policies***

NSW Policies relevant to catchment management of the Cooks River include:

- State Environmental Planning Policies (SEPPs): provide framework for plans which affect the environment – specifically, but not limited to, Regional Environmental Plans (REPs) and Local Environmental Plans (LEPs)
- State Rivers and Estuaries Policy (SREP): provides management objectives and principles to halt or reverse the overall rate of degradation in NSW rivers and estuaries, to ensure the long-term sustainability of their essential biophysical functions, and to maintain the beneficial use of these resources. This is achieved through the development of component policies, state rivers and estuaries reporting, and pilot river and estuary resource information studies
- State Wetlands Management Policy (SREP component): encourages the sustainable use, management and conservation of wetlands in NSW for the benefit of present and future generations. The policy ensures that the biophysical requirements of wetlands are explicitly considered in natural resource management decision-making
- Groundwater Policy Framework Document (SREP component): to encourage the sustainable management of the state's groundwater resources for the environmental, social and economic use of the people of NSW. The policy ensures that groundwater's ecosystem support function and the sustainability of groundwater use will be considered in resource management decision-making



- Total Catchment Management (TCM) Policy: promotes the sustainable and coordinated use and management of land, water, vegetation and other natural resources on a catchment basis. This is achieved by improving coordination between relevant Government agencies, developing TCM strategies for each major catchment in NSW by TCM committees, incorporating consideration of TCM into the environmental planning process, and encouraging community participation in TCM
- Weirs Policy (SREP component): halts, and where possible, reduces and remediates the negative environmental impacts of weirs. This is achieved by discouraging construction and enlargement of weirs, encouraging removal of redundant weirs and the modification of remaining weirs to reduce environmental impacts. The policy supports the adoption of weir management plans which address weir operation, maintenance, and environmental impacts.

### ***Agencies with Responsibilities in the Cooks River Catchment***

Following is a list of the main agencies responsible for various aspects of the management of the Cooks River catchment.

- Environment Protection Authority (EPA)
- Sydney Water
- Department of Land and Water Conservation (DLWC)
- Roads and Traffic Authority (RTA)
- State Rail
- NSW Health
- Department of Urban Affairs and Planning (DUAP)
- Waterways Authority
- NSW Fisheries
- Department of Public Works and Services (DPWS)

## **2.5 Local Government Areas and Plans**

The Cooks River Catchment comprises sections of 13 Local Government Areas. This adds to the complexity of implementing catchment-wide actions and highlights the need for the coordinating role of the CRCMC. The 13 local councils and the percentage of the Cooks River catchment which they each occupy is shown in Table 1. The catchment boundaries relative to Local Government Areas are shown in Figure 6.

*Table 1: Local Government Areas of the Cooks River Catchment*

<b>Local Government</b>	<b>% of Catchment</b>
Canterbury	23.7
Rockdale	19.9
Marrickville	11.9
South Sydney	10.0
Hurstville	9.1
Bankstown	8.9
Strathfield	6.7
Botany Bay	5.3
Burwood	1.9
Auburn	0.8
Randwick	0.7
Kogarah	0.6
Ashfield	0.5

*(Canterbury City Council, 1997)*



Figure 6. Local Government Areas within the Cooks River Catchment



Legislation relevant to Local Government is described under State Legislation, Policies and Plans, as there is no legislation which is particular to one council. Individual councils do, however, develop their own Local Environment Plans and Development Control Plans as well as other policies which are relevant to their particular area. These have been used as the basis for implementing many of the actions in the Action Plan.

Each of the thirteen councils within the Cooks River catchment has developed a Management Plan which guides works and management activities for the future. The success of local management plans is assessed in local council Catchment Reports and State of the Environment Reports which are updated every two years.

An Association of Councils in the Cooks River catchment was formed in 1998 to develop a Stormwater Management Plan (PPK, 1999). More detail on this document is given in Section 4.2.

### ***Regional Organisations of Councils***

Regional Organisations of Councils (ROCs) consist of local government groupings which are undertaking combined or regional State of the Environment reporting or developing Regional Management Strategies. This approach has been initiated due to the recognition by councils that many issues need to be managed on a regional basis. There are three Regional Organisations of Councils relevant to the Cooks River catchment which comprise some of the councils of the Cooks River catchment. These are the Southern Sydney Regional Organisation of Councils (SSROC), the Inner Metropolitan Regional Organisation of Councils (IMROC) and the Sydney Coastal Councils. Close communication is maintained between these groups and the CRCMC to avoid duplication of plans etc.

## **2.6 NSW Water Reforms**

In 1994, the Council of Australian Governments (COAG) – comprising all States, Territories and the Commonwealth, agreed that there was an urgent need to take action to improve the management of our water resources. Since then, NSW has committed to a range of water initiatives.

The NSW Government's water reform agenda which commenced in 1995 is based on three key goals:

- To better share the available water
- To enhance support to the rural water sector and
- To reshape how water management is delivered in NSW

The first actions included initiating the establishment of environmental objectives for the state waterways and setting up the Healthy Rivers Commission. To strengthen community involvement, the Water Advisory Council (WAC) was established in 1996 to advise on the implementation and broader impacts of the water reforms.

In August 1997, the Government announced its second stage – a water reform implementation package, *Securing Our Water Future*. The aspects of these initiatives which apply to the Cooks River catchment are:

- Proposed Interim Environmental Objectives for NSW
- Establishing the government's policies on groundwater and weirs
- Establishing River Management Committees

Implementation of the first two of the above aspects has begun in the Cooks River catchment, however the establishment of a River Management Committee had not begun by mid 1999. The Government will set water quality objectives for all intrastate catchments. River Management Committees will be responsible for providing advice on water quality management within their catchments.

Once environmental objectives have been established for NSW state rivers, groundwaters, estuaries and coastal waters, catchment plans will need to be developed and implemented to achieve them. A draft five year strategy is currently being developed for Water Management in NSW – 1999 to 2003.

### ***Catchment Approach to Water Reforms***

The water reform package builds on the integrated catchment-based approach to natural resources. The water reforms support broader reforms to TCM arising from the Government's review of that process.

The National Water Quality Management Strategy (NWQMS) provides a framework for choosing and setting interim water quality objectives. Economic evaluations have identified possible benefits and costs of the different water quality and river flow options (EPA, 1998).

Based on the proposals set out in the discussion papers, and an analysis of public input, the government will establish interim water quality objectives for all rivers and interim river flow objectives for all unregulated rivers. To achieve the interim objectives, detailed action plans that set out necessary measures and strategies will be developed.

### ***River Monitoring***

Monitoring of river health will be the responsibility of the State and local governments and the community. The EPA will be responsible for auditing catchment plans and other strategies needed to achieve the interim objectives. It will report to government on the success of meeting the environmental objectives and targets.

The Government expects to set interim water quality objectives for all rivers and flow objectives for unregulated rivers in 1999. This will provide agreed objectives for on-going planning and management of the Cooks River.

### ***Catchment Planning***

Catchment planning will be the key method of implementing water quality and river flow objectives. Plans will be locally developed for each catchment with community consultation, and approved by the government. These plans will include guiding the Government's own decision-making on environmental planning, pollution control and water regulation and extraction. Development of the Catchment Plan for the Cooks River will be coordinated by the DLWC. The Catchment Plan will help to rationalise the various existing and often overlapping plans and processes that affect all catchments, making them more effective and, in the long term, more economical and attainable.

Catchment planning will be a continuing process involving State and local government, industry, community groups, CMCs and resource users. The plans will provide a consultative approach for defining more detailed targets, strategies or actions needed to achieve environmental objectives for each catchment.



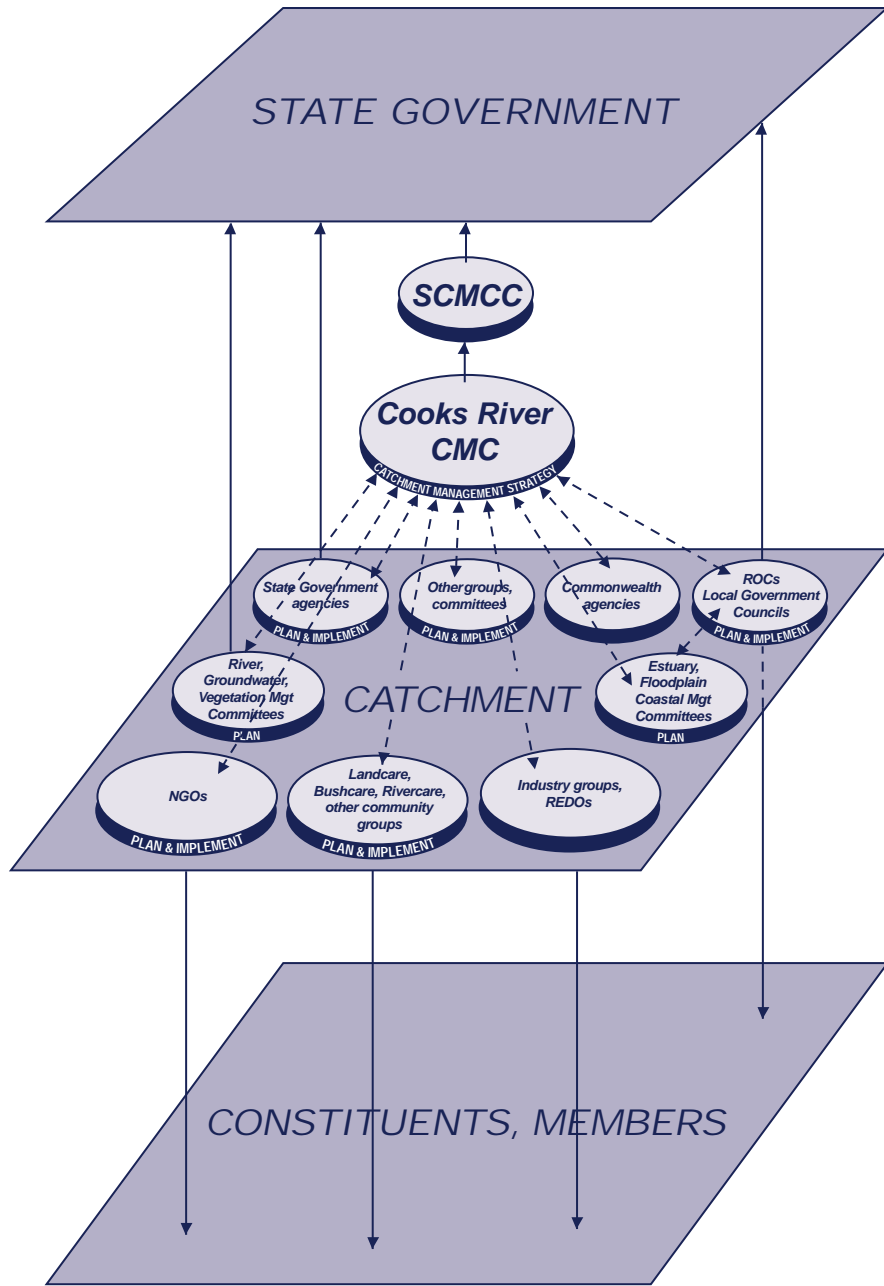


Figure 7: The relationship between the Cooks River Catchment Management Committee and the various government agencies and catchment groups

# BACKGROUND

## 3.1 Aims of Strategic Plan

The aim of this Strategic Plan is to enhance, conserve and protect the natural resources of the Cooks River Catchment (CRC) while considering the social and economic requirements of the community. The purpose of the Plan is to provide a tool for all members of the CRC, as well as government bodies and other organisations which have control over aspects of the CRC. The Plan describes goals for water, land and vegetation, biodiversity, cultural heritage and community education. It also identifies specific actions required to achieve sustainable management as well as details on how to implement these actions.

## 3.2 Development of the Strategic Plan

The decision to develop a new strategic plan was taken by the Cooks River Catchment Management Committee (CRCMC) early in 1997, following the release of the 1996 Annual Report to the Community. Many of the goals of the 1993 Plan (CRCMC, 1993) had been achieved and a new plan was required, building on earlier processes but with a longer view forward, into the next century. This is a 6 year plan for the period 1999–2005.

The development of the Strategic Plan was a staged process. The CRCMC developed an initial draft and used it as a basis for consultation with all key stakeholders. The CRCMC also held broad-based community consultations as well as discussions with relevant government agencies, local government and business and industry groups. Importantly, the consultation processes also specifically involved representatives of the Darug people.

The results of the consultations and discussions are reflected here. In addition, this Strategic Plan takes into account other key local planning documents.

These include:

- Cooks River Total Catchment Management Committee's Draft Management Action Plan (1991)
- Cooks River Catchment Management Strategy (1993)
- Environmental Condition of the Cooks River and Community Vision Strategy (1995)
- Cooks River 1996 Annual Report to the Community (1996)
- Cooks River Foreshores Strategic Plan (1997)
- Cooks River Catchment Pollution Source Inventory (1997)
- State of the Environment Reports of various local councils
- Cooks River Stormwater Management Plan (1999)
- Botany Sands Aquifer Management Plan (in preparation)

Other regional documents which have been used in the development of this Strategic Plan include:

- Green Web Sydney (1997)
- Sydney Regional Coastal Management Strategy (1998)
- Interim Southern Sydney Regional Strategic Plan (1998)

A comprehensive reading list is provided at the end of this document.

The CRCMC will use this Strategic Plan and Action Plan to develop its own Action Plans and Business Plans. It is hoped that, through their commitment to the Plan, key interest groups and stakeholders will incorporate its actions into their planning processes to achieve a unified approach in the management of the CRC.



### 3.3 Strategic Plan Framework

The plan includes:

- A Natural Resource Management Strategy, or Strategic Plan, relevant to the Cooks River and its catchment; provided by the vision, goals and objectives
- An Action Plan, providing a mechanism by which the Strategic Plan may be achieved, for all the stakeholders in the catchment



*Figure 8. The river and its parklands provide habitat and recreational values which should be protected and enhanced.*

# STRATEGIC PLAN

The Strategic Plan includes: a long term vision for the future; goals that have been established to strive for that vision; objectives for reaching the goals; actions for achieving the objectives; and indicators (or outcomes) to measure the extent to which the goals have been achieved.

## 4.1 Vision

The Cooks River CMC's vision for the Cooks River and its catchment is that the Cooks River catchment will comprise:

a community which values and respects its natural resources and heritage, and which is guided by the principles of ecologically sustainable development in a catchment where biodiversity of both terrestrial and aquatic ecosystems is enhanced and protected.

### *What Does the Vision Mean?*

The vision provides links and a common focus. It paints a picture of the ultimate goals of the strategy which then determine the outcomes to be achieved. It directs management strategies proposed to resolve issues and deal with problems.

Parts of the vision relate to areas of environment, culture and heritage, resource use, lifestyles and waterways administration and coordination.

## 4.2 Important Issues and Priorities

The identification of important issues specific to concerns within the catchment is the first step in counteracting the negative effects of human impacts within the catchment. The CRCMC has identified FIVE main issues which are addressed in this Strategic Plan. These five issues encompass the environmental sectors of water, land, biodiversity and heritage. The goals of the Strategic Plan have then been based on these four issues plus the issue of community education and awareness. Further identification of priority issues is shown in the Action Plans.

### *Water Quality*

Issues relating to water quality include nutrient and contaminant loads in both the sediment and the water column, waste water disposal, litter, and recreational activities. Objectives and actions relating to water quality involve water cycle management as a whole. The strategic plan deals with the following catchment issues which affect water quality:

- Contaminated sediments and water
- Surface litter
- Siltation and dredging
- Management of stormwater pollution
- Monitoring of industrial discharges
- Identification and management of point sources of pollution
- Management of water flows
- Habitat loss
- Loss of scenic amenity
- Wetland degradation and management
- Weed control
- Protection of viable habitats
- Flooding and floodplain management



Some of these issues are discussed in more detail below.

A comprehensive account of water quality in the CRC has been given in the Cooks River Annual Report to the Community (1996). What little water quality testing has been performed in the past has been sporadic and inconsistent, therefore trends that indicate whether water quality parameters have improved or not cannot be substantiated.

A water quality study using 6 sampling sites along the Rockdale Wetlands Corridor (Shennan, 1997) showed that none of the 6 sites complied with Australian and New Zealand Environment and Conservation Council (ANZECC) Water Quality Guidelines for Fresh and Marine Waters (1992). A more comprehensive account of this study is given in the Rockdale City Council State of the Environment Report 1997-1998.

Bankstown City Council has implemented a water quality monitoring programme in their part of the catchment over the last three years (Bankstown City Council State of the Environment Report 1998). The results showed that the waterways in the Cooks River catchment which were tested did not generally comply with ANZECC Guidelines (1992) as above.

The available data show that, on the whole, water quality continues to be poor. The lack of data highlights the need for a consistent, methodological, catchment-based water and sediment quality testing programme. This is required to ascertain whether the actions undertaken to improve water quality are working. The issue of insufficient and uncoordinated water quality and sediment testing has been addressed in this Strategic Plan as part of the NSW Government's Water Reform Agenda.

The issue of water flows is also important in the Cooks River catchment as many of the waterway channels are concrete-lined or reinforced. This has contributed to flooding in many areas. Various local councils have, however, restored some of these channels as has been done at Steel and Warren Parks in Marrickville (Figures 9 and 10).

Other channel restoration works are also planned by Strathfield Council and Sydney Water for the near future.



*Figure 9: Restoration works in progress on the Cooks River Channel at Steel and Warren Parks, Marrickville.*



Figure 10: Completed restoration of the Cooks River channel at Steel and Warren Parks, Marrickville.

## GROUNDWATER

The Botany Basin is important both historically and as the only significant groundwater source within about 45 kilometres of Sydney. Bore water supplies are used for industrial purposes such as cooling and manufacture of paper and chemical products, and for recreational irrigation of open space areas such as parks and gardens, golf links and bowling greens. Natural groundwater discharge from the sand bed aquifer supports important, dependent ecosystems such as the Botany Wetlands (DLWC, 1998).

A significant component of the natural discharge also enters the Alexandra Canal. The environmental condition of the groundwater that discharges to the canal will clearly have an impact on the surface water present in the canal. Hence the sustainable management of the Botany Basin's groundwater system is an important consideration with respect to the management of the Alexandra Canal (DLWC, 1998).

The Sand Beds have an estimated groundwater storage volume of 170,000 megalitres most of which is of low salinity. Current licensed use is around 11,000ML per year and within the estimated sustainable yield of 13-17,000ML/yr. However, the groundwater in the aeolian sand environment is very susceptible to contamination and there is much evidence of this having occurred from industrial spills and the effects of urbanisation within the basin (DLWC, 1998).

From the historical viewpoint it is of interest that this was Sydney's second source of water. Busby's Bore, a 4000m drive through the sandstone, brought water to the city from Centennial Park until 1859, and then a supply system ran from Botany Swamps until 1886.

An initial statewide assessment of groundwater (known as the Aquifer Risk Assessment) confirmed that a management plan is needed for the Botany Sands Aquifer; the DLWC had already commenced the plan's preparation following the recommendation of the Botany Aquifer Working Group. Aquifer systems (such as the Botany Sands Aquifer) which are identified as being at risk, because of water quality criteria, are required to have plans in place by 2000/01.

The Botany Sands Aquifer is currently judged to be stressed due to:

- the present environmental condition of the resource in some parts of the basin
- high vulnerability of the resource to degradation due to land use activities
- the significant role of the aquifer in sustaining the Botany Wetlands
- the aquifer only being able to be developed to a slightly higher usage as a source of water.



Preparation of the Plan commenced in late 1996. Tasks undertaken to date include:

- preparation of a Groundwater Protection Map of the Botany Basin (DLWC, 1996)
- review of licensing records and bore data statistics (DLWC, 1997)
- overview of historical groundwater level and chemistry data (INSEARCH Ltd UTS, 1997)
- initial community consultation workshops with selected stakeholders (October, 1997)
- installation of nine new monitoring wells (piezometers) at selected locations (Unisearch Ltd/DLWC, June/July, 1998).

A Botany Sands Groundwater Management Advisory Committee oversaw the initial tasks associated with the preparation of the plan. A new committee with an independent chairperson has been established in accordance with composition rules for such committees under the NSW Water Reform Agenda.

### **SEWAGE OVERFLOWS**

Sewage overflows have been subjected to an Environmental Impact Statement (SWC, 1998). The NSW EPA is currently completing the Determination Report which will document sewage overflow license approval conditions to mitigate adverse environmental and health effects from the overflows.

### **STORMWATER**

A Cooks River Stormwater Management Plan has recently been prepared to fulfil an EPA Directive (Section 12 of the Protection of the Environment Administration Act, 1991) which requires all local councils to prepare catchment-based stormwater management plans. An Association of councils was formed in the Cooks River catchment so as to allow an integrated catchment approach to the plan. A Stormwater Steering Committee comprising members of the Association of Councils was set up to oversee development of the plan. To implement some of the priorities of the plan, the Steering Committee received an EPA Grant of \$1.3 million in 1999.

### **Land and Vegetation Management**

The CRCMC has identified foreshore area and watercourse channel improvements as a main priority within the catchment. Due to the long history of industrial activity in the catchment, areas of contaminated land, such as the former Tempe waste disposal site (Figure 11) which has been subjected to an EPA remediation directive, present on-going challenges to the various agencies responsible for these areas. Another concern which has also been raised is commitment from the community, at all levels, to understand and appreciate the effects they may be having on the catchment and, ultimately, the waterways. Other land and vegetation management issues which have been identified and for which appropriate actions proposed are:

- habitat loss
- loss of scenic amenity
- weed control
- protection of viable habitats
- contamination
- waste management – disposal sites, industry waste, litter, dumping
- management of run-off from construction sites
- controls on new urban development
- soil erosion
- reclaimed land
- transport developments.

### **WEEDS**

One of the major impacts on the bushland and waterways of the Cooks River catchment is the spread of exotic plant species. These weeds typically out-compete the native species, impeding their regeneration. This results in significant changes in the structure and amenity of the local ecological communities.



Figure 11: Contaminated land at the former Tempe Waste Disposal site which has presented a challenge to Marrickville Council since the EPA issued a directive to remediate the site.

### **RECLAIMED LAND**

Filled sites in the Cooks River catchment include parts of the Kingsford Smith Airport, large areas along Alexandra Canal, Henson Park, Steel Park, Hurstville Aquatic Centre, Olds Park, Penshurst Park, Kempt Field, Laxton Reserve, Morton Park, Jarvie Park, Barton Park and Wicks Park (TEC, 1976).

Re-establishment of native vegetation is often difficult to achieve on reclaimed land. There are a number of factors responsible for this, including changes in soil chemistry, water absorption, and soil horizon structure. The heterogeneous (i.e. variable) composition of most fill material, unlike the relatively homogenous natural soils, may vary with each load of material moved.

### **TRANSPORT DEVELOPMENTS**

The Cooks River catchment still remains threatened by urban development, particularly by road and rail developments such as:

- the M5 East Motorway which is currently under construction and will pass through the floodplain of Wollli Creek and across the northern edge of the Eve Street Wetlands in Arncliffe
- the Chullora Railway Yards development
- the potential redevelopment of Enfield Marshalling Yards
- the Eastern Distributor, which will pass through Woolloomooloo, Surry Hills, Redfern, Moore Park, Waterloo, Zetland, Kensington, Rosebery, Kingsford, Eastlakes and Mascot
- the new Southern Railway Line is currently under construction and includes tunnels under the Cooks River at Tempe.

### **Biodiversity**

Biodiversity is the variety of all life forms, including micro-organisms, plants and animals, their genes and the ecosystems which they make up. Biodiversity is often used as an indicator of the “health” of an ecosystem. Ecosystems with a high biodiversity usually have not been adversely impacted upon or have recovered from a negative impact.

Terrestrial fauna species in the Cooks River catchment are considered to be typical of most Sydney urban catchments, with the exception of the Eastern Bush Rat which is not



usually found in urban bushland. Pressures on native fauna and their habitats, as a result of land clearing, intense development, recreation use, introduced fauna, pollution, draining and filling of wetlands, and fluctuating fire regimes, have greatly reduced species diversity (Clouston, 1997).

Due to the heavily urbanised nature of the Cooks River Catchment and the constant threat of new developments, very little native flora and fauna remain. Protection and enhancement of biodiversity has therefore been identified as one of the most important issues affecting the Catchment.

### ***Cultural Heritage***

An important issue in this part of inner Sydney is the awareness of the importance of both indigenous and non-indigenous cultural heritage (Figure 12). Recognition of the values and rights of the local Aboriginal population is a priority. Key issues which have been identified are:

- identification, enhancement and conservation of items and areas of cultural heritage
- consultation with Aboriginal people
- recognition of the rights of indigenous people.



*Figure 12: The South Western Ocean Outfall Sewer Crossing at Wanstead Reserve is an item of architectural heritage.*

### ***Community Education and Awareness***

If the goals of the Strategic Plan are to be achieved, commitment is required from community members within the catchment. This requires a widespread and evolving community education and awareness campaign. Government, industry and community cooperation is also a necessity if the goals of the Strategic Plan are to be achieved. This Strategic Plan embraces a coordinated approach that reflects the complexity of the natural world and the cultural values associated with it.

### 4.3 Goals and Objectives

We believe our vision can be realised if we can achieve the following:

**Goal 1:** Sustainable water management which includes the enhancement and protection of natural flow regimes and natural processes, and improvement of water quality.

**Goal 2:** Land and vegetation management which follows the principles of Ecologically Sustainable Development so that biodiversity is enhanced.

**Goal 3:** Aquatic and terrestrial ecosystems and habitats restored, rehabilitated, enhanced and protected so as to promote and/or maintain essential ecological processes and biodiversity.

**Goal 4:** Protection, conservation and enhancement of areas and items of cultural heritage, and respect for the contribution of Aboriginal people to the catchment.

**Goal 5:** An informed and committed community, working to address priority natural resource and environmental issues using the principles of Ecologically Sustainable Development.



## Water Management

# 4

### GOAL 1

**Sustainable water management which includes the enhancement and protection of natural flow regimes and natural processes, and improvement of water quality.**

#### *Rationale*

This will encourage the return of native aquatic flora and fauna species which will increase the biodiversity of waterways. To allow primary contact recreation, water quality parameters must be improved substantially.

#### **Objectives:**

- 1.1 Achieve compliance with Australian and New Zealand Environment Conservation Council (ANZECC) Guidelines (1992) for proposed interim water quality objectives for the Cooks River catchment in accordance with the NSW Government Water Reforms (EPA, 1998)
- 1.2 The enhancement, restoration and protection of natural flows in water-bodies to satisfy the NSW Environment Protection Authority's Environmental Flow Objectives (1998)
- 1.3 Improve quality and monitor quantity of water in Botany Sands Aquifer

# Land and Vegetation Management

## GOAL 2

Land and vegetation management which follows the principles of Ecologically Sustainable Development so that biodiversity is enhanced.

### *Rationale*

Use of public access areas, particularly foreshore areas, requires management to ensure ecosystems and habitats are restored, rehabilitated, enhanced and protected so as to promote and/or maintain essential ecological processes, biodiversity, and recreational and aesthetic qualities.

#### **Objectives:**

- 2.1 Promote the provision of aesthetically pleasing recreational facilities by councils while protecting native flora and fauna habitats
- 2.2 Promote coordination between major stakeholders to ensure that access to bushland, wetlands and other open spaces does not encroach on environmentally sensitive areas
- 2.3 Integrated and coordinated land and water resource management practices developed and implemented between councils, State Agencies and community groups
- 2.4 Remove legislative and administrative impediments to, and support initiatives which facilitate, the use of best management practices in government, industry and community
- 2.5 Include ESD principles in land-use and development decisions and provide ESD/precautionary principle input into the preparation of plans and policies
- 2.6 Remediate contaminated land in accordance with legislation and subject to principles of ESD.



## Biodiversity

# 4

### GOAL 3

**Aquatic and terrestrial ecosystems and habitats restored, rehabilitated, enhanced and protected so as to promote and/or maintain essential ecological processes and biodiversity.**

#### *Rationale*

Native flora and fauna require habitats which are free of weeds, pests and contamination to give them an optimal chance of survival in this highly urbanised catchment.

#### **Objectives:**

- 3.1 Enhance and protect the biodiversity of the Cooks River catchment

## Cultural Heritage

### GOAL 4

4

Protection, conservation and enhancement of areas and items of cultural heritage, and respect for the contribution of Aboriginal people to the catchment.

#### *Rationale*

The history of the people of the Cooks River and its catchment will be recognised and understood, leading to greater appreciation of the role of the original inhabitants and later arrivals.

#### **Objectives:**

- 4.1 Improved understanding of, and commitment to, the conservation, interpretation and appropriate public use of areas and items of cultural heritage
- 4.2 Increased awareness and understanding of the significance of the cultural heritage of the Cooks River catchment
- 4.3 The recognition of the rights and needs of indigenous people and their contribution to the protection of items of cultural value



## Education and Awareness

# 4

### GOAL 5

**An informed and committed community, working to address priority natural resource and environmental issues using the principles of ecologically sustainable development.**

#### *Rationale*

The catchment community needs to develop and adhere to practices which embrace Total Catchment Management. Widespread community awareness of the relationship between water quality and the surrounding catchment will lead to greater participation in positive environmental and decision-making processes.

#### **Objectives:**

- 5.1 Promote and raise awareness of the importance of increasing and maintaining the biological diversity of the Cooks River catchment
- 5.2 The provision of adequate information to enable the catchment to be managed efficiently
- 5.3 Raise community awareness of Total Catchment Management and promote and provide opportunities for community education and participation

# ACTION PLAN

## 5.1 Overview

To implement the Strategic Plan, specific actions are required. Suggested actions are given under each of the objectives along with who is responsible and how the action can be implemented. Actions are also prioritised according to urgency of implementation, as shown by the time-frame given. Upon review of the outcome indicator, actions which have succeeded or have been completed can then be demonstrated, and the next action can be undertaken. If the outcome indicator shows that the action has not succeeded then an alternative action can be implemented.

The action plan includes:

- 1 Action: What the action involves
- 2 Responsibility: Working Groups and organisation(s) responsible for carrying out the action
- 3 Activities: Activities required to implement actions with suggested documents and/or resources required
- 4 Time-frame: Each action is designated a suggested time-frame in which to commence and complete implementation. As this is a "living document" time-frames may be reviewed by the various working groups and stakeholders assigned to implement the specific action or activity and alter them as necessary
- 5 Outcomes: Accompanying each action or group of actions is an outcome or performance indicator which will allow an assessment to be made of the success or otherwise of that action(s).

### Working Groups

Five CRCMC working groups have been established in order to facilitate the implementation of actions in this Plan. The five working groups are:

- Water Working Group **WWG**
- Land and Vegetation Working Group **LVWG**
- Biodiversity Working Group **BWG**
- Cultural Heritage Working Group **CHWG**
- Education and Awareness Working Group **EWG**

The Committee has agreed to combine the Cultural Heritage and Education and Awareness Working Groups due to the similarity of issues involved. The CMC Coordinator will be responsible for overall coordination of implementation of the Plan.



## 5.2 WATER ACTION PLAN

Goal 1: Sustainable water management which includes the enhancement and protection of natural flow regimes and natural processes and improvement of water quality

OBJECTIVE	ACTIONS	ACTIVITIES	RESPONSIBILITY	TIME FRAME	OUTCOMES
1.1 Achieve compliance with Australian and New Zealand Environment Conservation Council (ANZECC) Guidelines (1992) for proposed interim water quality objectives for the Cooks River catchment in accordance with the NSW Government Water Reforms (EPA, 1998).	1.1.1 Establish a catchment-based water and sediment quality monitoring programme using consistent water quality indicators and techniques. The results will highlight major sources of pollution and which pollutants require priority management.	<ul style="list-style-type: none"> <li>Liaise with Project Manager responsible for implementing water quality testing in Cooks River catchment as part of auditing/education programme using funds acquired through the stormwater grant from the EPA.</li> </ul>	Water Quality WWG Councils	Within 12 months	<ul style="list-style-type: none"> <li>Implementation of a catchment-wide river, sediment and groundwater monitoring programme using methodology approved by the EPA.</li> </ul>
	1.1.2 Control and/or alleviate point sources of pollution as discussed in the Pollution Source Inventory (1997). This action should be implemented at the completion of Action 1.1.1.	<ul style="list-style-type: none"> <li>Liaise with Project Manager as above and as part of stormwater grant funded programme in 1.1.1.</li> <li>Analyse results of water quality monitoring programme.</li> <li>Implement education component of Kids, Companies and Creeks programme.</li> <li>Ensure all business, commercial and industrial premises are educated with 'Solutions to Pollution' literature from the EPA.</li> <li>Councils and EPA to monitor compliance with anti-pollution legislation.</li> </ul>	WWG EWG Councils EPA	1-3 years	

## 5.2 WATER ACTION PLAN

Goal 1: Sustainable water management which includes the enhancement and protection of natural flow regimes and natural processes and improvement of water quality

OBJECTIVE	ACTIONS	ACTIVITIES	RESPONSIBILITY	TIME FRAME	OUTCOMES	
1.1 Achieve compliance with Australian and New Zealand Environment Conservation Council (ANZECC) Guidelines (1992) for proposed interim water quality objectives for the Cooks River catchment in accordance with the NSW Government Water Reforms (EPA, 1998).	1.1.3 Provide increased resources, if required, to monitor current legislation to ensure it is enforced, eg ensure that businesses have trade waste agreements to discharge their waste to the sewer; enforcement of sediment controls etc.	<ul style="list-style-type: none"> <li>Inspection staff conduct audits similar to the project funded by the EPA in the Alexandra Canal catchment. This will be funded as part of the Cooks River Stormwater Grant as above.</li> </ul>	<b>Pollution</b> WWG EWG Councils EPA Sydney Water	Within 12 months	<ul style="list-style-type: none"> <li>Pollution sources alleviated as shown by improved water quality parameters.</li> <li>Substantially increased compliance with guidelines and legislation within a 12 month period following audit.</li> </ul>	
	<b>Stormwater</b>					
	1.1.4 Implement Stormwater Management Plan and monitor results.	<ul style="list-style-type: none"> <li>As per Cooks River Stormwater Management Plan (PPK, 1999).</li> </ul>	WWG EWG Sydney Water All stakeholders	Implement priority actions over 5 years	<ul style="list-style-type: none"> <li>Actions in CRSMP are completed and evaluated.</li> </ul>	
	1.1.5 Provide numbering of main stormwater drain outlets to the River and tributaries with appropriate signage with a "pollution hotline" phone number. This will allow more rapid identification of any sources of pollution once detected.	<ul style="list-style-type: none"> <li>Investigate feasibility of undertaking with signage audit organised by Cooks River Foreshores Working Group. Apply for CMC grant.</li> </ul>	WWG	Within 12 months		
	1.1.6 Encourage community members to install water recycling systems such as household rainwater tanks for outside water use, eg in gardens, washing car etc.	<ul style="list-style-type: none"> <li>Develop policies and educational programmes, including monetary incentives.</li> <li>Establish conditions on development consent, the development and/or revision of DCP's and promote water conservation advantages of using same.</li> </ul>	WWG EWG Councils	Commence action within 12 months and maintain as on-going action	<ul style="list-style-type: none"> <li>Increased installation of water recycling systems.</li> </ul>	



## 5.2 WATER ACTION PLAN

Goal 1: Sustainable water management which includes the enhancement and protection of natural flow regimes and natural processes and improvement of water quality

OBJECTIVE	ACTIONS	ACTIVITIES	RESPONSIBILITY	TIME FRAME	OUTCOMES
1.1 Achieve compliance with Australian and New Zealand Environment Conservation Council (ANZECC) Guidelines (1992) for proposed interim water quality objectives for the Cooks River catchment in accordance with the NSW Government Water Reforms (EPA, 1998).	1.1.7 Implement Rockdale Wetlands Management Strategy (1999) for Rockdale Wetlands and Recreation Corridor.		Nature Conservation Rockdale City Council	On-going	<ul style="list-style-type: none"> <li>Management Strategy implemented and evaluated.</li> </ul>
	1.1.8 Ensure boating activities do not negatively impact on foreshores.	<ul style="list-style-type: none"> <li>Review recreational usage by speed boats in river to determine areas which are adversely impacted and prepare and implement management strategies to protect foreshores.</li> <li>Consider ban on power boats upstream of Princes Highway.</li> </ul>	Boating WWG Waterways Authority	1-3 years	<ul style="list-style-type: none"> <li>Foreshores are not adversely impacted upon by boating activities.</li> </ul>
	1.1.9 Investigate the use of innovative measures (planting of seagrasses, bio-remediation) for remediation of contaminated sediments.	<ul style="list-style-type: none"> <li>CMC Coordinator to coordinate after review of sediment pollution monitoring programme.</li> </ul>	Water Course Sediment Remediation WWG DLWC EPA NSW Fisheries	1-3 years	<ul style="list-style-type: none"> <li>Options and costs of sediment remediation determined and most appropriate remediation strategy implemented.</li> </ul>

## 5.2 WATER ACTION PLAN

Goal 1: Sustainable water management which includes the enhancement and protection of natural flow regimes and natural processes and improvement of water quality

OBJECTIVE	ACTIONS	ACTIVITIES	RESPONSIBILITY	TIME FRAME	OUTCOMES
<p><b>1.1</b> Achieve compliance with Australian and New Zealand Environment Conservation Council (ANZECC) Guidelines (1992) for proposed interim water quality objectives for the Cooks River catchment in accordance with the NSW Government Water Reforms (EPA, 1998).</p>	<p>1.1.10 Provide dog faeces collection containers and educate public about same.</p>	<ul style="list-style-type: none"> <li>Provide highly visible signage in areas designated as dog exercise areas in accordance with Companion Animals Act</li> <li>Educate public via other environmental education campaigns.</li> </ul>	<p>Councils</p>	<p>1-3 years</p>	<ul style="list-style-type: none"> <li>Decrease in number of dog faeces visible in public areas and reduction in faecal coliform concentrations in water quality test results.</li> </ul>
	<p>1.1.11 Investigate the feasibility of releasing dung beetles in the catchment to assist in reducing dog faeces.</p>		<p>Councils</p>	<p>1-3 years</p>	<ul style="list-style-type: none"> <li>Decrease in number of dog faeces visible in public areas and reduction in faecal coliform concentrations in water quality test results.</li> </ul>
	<b>Sewage</b>				
	<p>1.1.12 Implement sewage overflow abatement programme as conditions of sewage overflow licences when granted by EPA.</p>		<p>Sydney Water</p>	<p>Within timeframe specified on licence conditions</p>	<ul style="list-style-type: none"> <li>Sewage overflows eliminated or impacts of sewage overflows eliminated.</li> </ul>
	<p>1.1.13 Monitor and investigate illegal connections of stormwater to sewer.</p>	<p>Infiltration/Exfiltration programme and Auditing/Environmental reviews as component of Stormwater auditing programme in 1.1.1.</p>	<p>Sydney Water Stormwater Auditing Team WWG</p>	<p>Within time-frame specified on programme</p>	<ul style="list-style-type: none"> <li>No illegal sewer to stormwater connections.</li> </ul>



## 5.2 WATER ACTION PLAN

Goal 1: Sustainable water management which includes the enhancement and protection of natural flow regimes and natural processes and improvement of water quality

OBJECTIVE	ACTIONS	ACTIVITIES	RESPONSIBILITY	TIME FRAME	OUTCOMES
1.2 The enhancement, restoration and protection of natural flows in water-bodies to satisfy the NSW Environment Protection Authority's Environmental Flow Objectives (1998).	1.2.1 Examine the feasibility of de-channelling as many of the stormwater drainage channels in the catchment as possible to return them to near-natural conditions.	<ul style="list-style-type: none"> <li>Discuss with Councils, DLWC and other relevant authorities.</li> <li>Refer to Cooks River Foreshores Strategic Plan (Clouston, 1997) and prepare management plan as to how the work could be performed, listing priority areas and funding and resources required.</li> <li>Make submission to EPA to obtain Stormwater Grant funding.</li> </ul>	WWG DLWC EPA NSW Fisheries Councils	Within 12 months	<ul style="list-style-type: none"> <li>Preparation of stormwater drainage channel rehabilitation management plan.</li> </ul>
	1.2.2 Provide adequate riparian vegetation buffer zones around water channels as per Cooks River Foreshores Strategic Plan. Also refer to Green Web – Sydney (see Action 2.1.1).	<ul style="list-style-type: none"> <li>Encourage native vegetation planting and conservation of established native vegetation.</li> <li>Control pests and weeds.</li> <li>Make submissions to obtain NHT, Rivercare, Landcare funding etc.</li> </ul>	WWG Councils	3-6 years	<ul style="list-style-type: none"> <li>Riparian zone established with native vegetation whilst also providing areas for seating etc.</li> </ul>
	1.2.3 Encourage appropriate groups to apply for site-specific funding for bank and watercourse rehabilitation.	<ul style="list-style-type: none"> <li>Implement stormwater drainage channel rehabilitation as per Cooks River Stormwater Management Plan (1999).</li> </ul>	WWG Councils	1-3 years	<ul style="list-style-type: none"> <li>Progressive rehabilitation of drainage channels according to priority.</li> </ul>
1.3 Improve quality and monitor quantity of water in Botany Sands Aquifer.	1.3.1 Implement Botany Sands Aquifer Management Plan when released.	<ul style="list-style-type: none"> <li>A Botany Sands Aquifer Management Plan is being developed as part of the Water Reform Package for improved water management, in accordance with the State Groundwater Policy (1997).</li> </ul>	WWG Councils DLWC EPA Dept. of Health All groundwater users	Within 3 months of release of plan	<ul style="list-style-type: none"> <li>Implementation of the Groundwater Management Plan results in improved groundwater quality.</li> </ul>
	1.3.2 Implement the NSW Groundwater Policy.	<ul style="list-style-type: none"> <li>As per NSW Groundwater Policy (1997).</li> </ul>	WWG DLWC	1-3 years	<ul style="list-style-type: none"> <li>Groundwater Policy implemented until Botany Sands Aquifer Management Plan released, resulting in improved groundwater quality.</li> </ul>

## 5.3 LAND AND VEGETATION ACTION PLAN

Goal 2. Urban management which follows the principles of Ecologically Sustainable Development so that land and vegetation is managed to ensure biodiversity is enhanced

OBJECTIVE	ACTIONS	ACTIVITIES	RESPONSIBILITY	TIME FRAME	OUTCOMES
2.1 Promote the provision of aesthetically pleasing recreational facilities by councils while protecting native flora and fauna habitats.	<p>2.1.1 Enhance, conserve and maintain areas of public open space and vegetation/wildlife corridors for public access whilst also allowing for conservation of habitats and ecosystems.</p> <p>2.1.2 Support councils in implementing actions described in Cooks River Foreshores Strategic Plan (Clouston, 1997) and ensure actions are in accordance with best practice of environmental preservation and coordinated on a catchment basis.</p>	<p>Implement</p> <ul style="list-style-type: none"> <li>The Sydney Regional Organisation of Councils (1997) Green Web – Sydney</li> <li>Cooks River Foreshores Strategic Plan (1997).</li> </ul> <p>• Implement priority actions from CRFSP (1997).</p>	Councils BWG LVWG	On-going	<ul style="list-style-type: none"> <li>Recreational facilities do not adversely impact on conservation areas.</li> </ul> <p>• Progressive Implementation of actions in CRFSP (1997).</p>
2.2 Promote coordination between major stakeholders to ensure that access to bushland, wetlands and other open spaces does not encroach on environmentally sensitive areas.	<p>2.2.1 Increase native bushland areas to avoid fragmentation of reserves.</p> <p>2.2.2 Work with all relevant authorities and groups to overview the design and siting of walking tracks.</p>	<ul style="list-style-type: none"> <li>Ensure walking tracks are placed to avoid adverse impacts to conservation areas.</li> </ul> <p>• Provide input to plan-making.</p>	Councils BWG LVWG	On-going	<ul style="list-style-type: none"> <li>Bushland reserves and parklands are less fragmented.</li> <li>Walking tracks have minimal adverse impact on conservation areas.</li> </ul>
2.3 Integrated and coordinated land and water resource management practices developed and implemented between councils, State Agencies and community groups.	2.3.1 Establish coordinated planning practices with local governments, Dept. Urban Affairs and Planning and the CMC.	<ul style="list-style-type: none"> <li>Provide input to plan-making.</li> </ul>	Councils EPA Sydney Water RTA DLWC LVWG	On-going	<ul style="list-style-type: none"> <li>Planning coordinated and integrated on a catchment basis.</li> </ul>



### 5.3 LAND AND VEGETATION ACTION PLAN

Goal 2. Urban management which follows the principles of Ecologically Sustainable Development so that land and vegetation is managed to ensure biodiversity is enhanced

OBJECTIVE	ACTIONS	ACTIVITIES	RESPONSIBILITY	TIME FRAME	OUTCOMES
2.3 Integrated and co-ordinated land and water resource management practices developed and implemented between councils, State Agencies and community groups.	2.3.2 Ensure all community land in the catchment has completed Plans of Management under Local Government Act.		LWWG Councils	1-3 years and maintain as on-going action	<ul style="list-style-type: none"> <li>Management Plans developed and implemented for all community land.</li> </ul>
	2.3.3 All local governments be encouraged to adopt uniform best practice Local Environment Plans in relation to the reduction of pollution from any work involving an Environmental Planning Instrument e.g. develop buffer zones along the river for new industrial developments.	<ul style="list-style-type: none"> <li>Assist in preparation and adoption by councils of LEPs.</li> </ul>	LWWG Councils	On-going	<ul style="list-style-type: none"> <li>Uniform best practice LEPs developed and implemented.</li> </ul>
2.4 Remove legislative and administrative impediments to, and support initiatives which facilitate, the use of best management practices in government, industry and community.	2.3.4 Produce a management plan for the headwaters of the Cooks River.		BWG LWWG Bankstown Council	1-3 years	<ul style="list-style-type: none"> <li>Cooks River Headwaters Management Plan developed.</li> </ul>
	2.4.1 Establish awards for industry and promote best practice.	<ul style="list-style-type: none"> <li>Implement in conjunction with auditing/education programme outlined in Action 1.1.1.</li> </ul>	Councils EWG	Within 12 months and maintain as on-going action	<ul style="list-style-type: none"> <li>Industry Awards System established.</li> </ul>
	2.4.2 Encourage industry to take positive actions to assist in the improvement of the management of the land and water resources of the catchment.	<ul style="list-style-type: none"> <li>Industrial/commercial premises that are designated "environmentally friendly" used as a showcase for other premises within the catchment.</li> </ul>	Councils EPA EWG LWWG	Within 12 months and maintain as on-going action	<ul style="list-style-type: none"> <li>Increase in environmentally friendly actions by industry.</li> </ul>

### 5.3 LAND AND VEGETATION ACTION PLAN

Goal 2. Urban management which follows the principles of Ecologically Sustainable Development so that land and vegetation is managed to ensure biodiversity is enhanced

OBJECTIVE	ACTIONS	ACTIVITIES	RESPONSIBILITY	TIME FRAME	OUTCOMES
2.4 Remove legislative and administrative impediments to, and support initiatives which facilitate, the use of best management practices in government, industry and community.	2.4.3 Support Regional Waste Boards.	<p>Ensure implementation of:</p> <ul style="list-style-type: none"> <li>Waste Minimisation and Management Act and Regulations, 1995</li> <li>Keep Australia Beautiful (1998) Waste Minimisation Manual for Local Government – a guide to resources, issues and best practice.</li> </ul>	LVWVG Councils	Within 12 months and maintain as on-going action.	<ul style="list-style-type: none"> <li>Best practice implemented for waste disposal and minimisation.</li> </ul>
	2.4.4 Reduce urban runoff by limiting impervious surfaces when landscaping and examine the feasibility of using semi-permeable surfaces instead of impermeable surfaces, if possible.	<ul style="list-style-type: none"> <li>Councils to develop and implement landscape DCPs.</li> </ul>	LVWVG Councils	1-3 years and maintain as on-going action.	<ul style="list-style-type: none"> <li>Areas of impervious surfaces in new developments minimised.</li> </ul>
	2.4.5 Encourage installation of stormwater detention and retention appliances when granting consent for new developments or redevelopments.	<ul style="list-style-type: none"> <li>Develop LEPs, DCPs and Section 94 of the Environmental Planning and Assessment Act (contributions and other funding options, e.g. rate revenue) and Section 495 of the Local Government Act (special rates).</li> </ul>	LVWVG Councils	1-3 years and maintain as on-going action.	<ul style="list-style-type: none"> <li>New developments contain appropriate anti-pollution infrastructure relevant to that development.</li> </ul>
	2.4.6 Implement the Southern Sydney Regional Organisation of Councils' Strategy on Erosion and Sediment Control for building sites throughout entire catchment (SSROC, 1998).	<ul style="list-style-type: none"> <li>Develop appropriate best practice DCPs for sediment control.</li> <li>Improve policing and enforcement of regulations.</li> </ul>	LVWVG Councils EPA DLWC	1-3 years and maintain as on-going action.	<ul style="list-style-type: none"> <li>Increase in compliance with best practice on construction sites.</li> </ul>



### 5.3 LAND AND VEGETATION ACTION PLAN

Goal 2. Urban management which follows the principles of Ecologically Sustainable Development so that land and vegetation is managed to ensure biodiversity is enhanced

OBJECTIVE	ACTIONS	ACTIVITIES	RESPONSIBILITY	TIME FRAME	OUTCOMES
2.5 Include ESD principles in land-use and development decisions and provide ESD/precautionary principle input into the preparation of plans and policies.	2.5.1 Encourage all those making decisions on the use and management of land and water resources within the catchment to use the relevant principles in Agenda 21 as a basis for their decision-making.	Implement: <ul style="list-style-type: none"> <li>Marrickville Council (1997) Marrickville Agenda 21 Environment Strategy 1997.</li> <li>International Council for Local Environmental Initiatives (1996) The Local Agenda 21 Planning Guidelines – an Introduction to Sustainable Development Planning.</li> <li>Municipal Conservation Association (1994) Managing the Future: A Local Government Guide to Local Agenda 21.</li> </ul>	LVWVG Councils	Within 12 months and maintain as on-going action	<ul style="list-style-type: none"> <li>ESD Principles incorporated into decision-making process.</li> </ul>
	2.5.2 Adopt and support the Southern Sydney Regional Organisation of Councils (SSROC) Greenhouse Strategy.	<ul style="list-style-type: none"> <li>SSROC (1992) A Greenhouse Strategy for the Southern Sydney Region.</li> </ul>	LVWVG Councils	On-going	<ul style="list-style-type: none"> <li>SSROC (1992) A Greenhouse Strategy for the Southern Sydney Region approved and implemented throughout catchment.</li> </ul>
	2.5.3 Develop plan to manage boat launching and retrieval so as to minimise impacts of these activities on foreshores.		Waterways Authority	1-3 years	<ul style="list-style-type: none"> <li>Boat launching Management Plan developed and implemented.</li> </ul>
	2.5.4 Councils to make LEPs/DCPs providing for a minimum 10m setback from the river and tributaries for all new developments.	<ul style="list-style-type: none"> <li>Councils to make LEP/DCP</li> </ul>	LVWVG Councils	Within 12 months and maintain as on-going action	<ul style="list-style-type: none"> <li>No new piping of watercourse channels.</li> <li>Increased area of riparian zone covered in native vegetation.</li> </ul>
2.6 Remediate contaminated land in accordance with legislation and subject to principles of ESD.	2.6.1 Update and maintain database of contaminated sites and encourage remediation of same.	<ul style="list-style-type: none"> <li>Assist in the reporting of contaminated sites to EPA and actions by the EPA and landowners in accordance with Contaminated Land Management Act, 1997.</li> </ul>	LVWVG EPA Councils	Within 12 months and maintain as on-going action	<ul style="list-style-type: none"> <li>Number of sites on database increases with evidence of remediation being undertaken on known sites.</li> </ul>

## 5.4 BIODIVERSITY ACTION PLAN

Goal 3. Aquatic and terrestrial ecosystems and habitats are restored, rehabilitated, enhanced and protected so as to promote and/or maintain essential ecological processes and biodiversity

OBJECTIVE	ACTIONS	ACTIVITIES	RESPONSIBILITY	TIME FRAME	OUTCOMES
3.1 Enhance and protect the biodiversity of the Cooks River catchment.	3.1.1 Promote the enhancement, rehabilitation and protection of riparian vegetation areas and corridors.	<p><b>Preservation of Habitats, Protect Areas and Remnant Bushland</b></p> <ul style="list-style-type: none"> <li>• Implement relevant sections of CRFSP (Clouston, 1997) and State of the Environment Reports.</li> <li>• Produce a Riparian Zone Management Policy and ensure it is incorporated as a development condition.</li> <li>• Ensure any riparian zone rehabilitation conforms with riparian management guidelines (DLWC); NSW Government (1993) The NSW Government State Rivers and Estuaries Policy; Brisbane City Council (1995) Urban Stream Rehabilitation: Principles and Guidelines; NSW Government (1996) NSW Wetlands Management Policy; DLWC (1999) Local Government Guidelines for Riverine Corridor Management.</li> </ul>	BWG Councils	On-going	<ul style="list-style-type: none"> <li>• Area of riparian zone covered in native vegetation increased.</li> </ul>



## 5.4 BIODIVERSITY ACTION PLAN

Goal 3. Aquatic and terrestrial ecosystems and habitats are restored, rehabilitated, enhanced and protected so as to promote and/or maintain essential ecological processes and biodiversity

OBJECTIVE	ACTIONS	ACTIVITIES	RESPONSIBILITY	TIME FRAME	OUTCOMES	
3.1 Enhance and protect the biodiversity of the Cooks River catchment.	3.1.2 Promote the enhancement, rehabilitation and protection of riparian vegetation areas and corridors on both public and private land.	<b>Preservation of Habitats, Protect Areas and Remnant Bushland</b>			Within 12 months and maintain as on-going	<ul style="list-style-type: none"> <li>Increased area of native bushland throughout catchment.</li> </ul>
		<ul style="list-style-type: none"> <li>Implement relevant sections of CRSFP (1997) and State of the Environment Reports.</li> <li>Implement SEPP 19 – Bushland in Urban Areas and appropriate LEPs, DCP's and development consent conditions.</li> <li>Promote initiatives which encourage conservation such as a Code of Conduct, Voluntary Conservation Agreements, NPWS's Wildlife Agreements as well as Council Guidelines for planting native vegetation which is also indigenous.</li> </ul>	BWG Councils			
	3.1.3 Promote and continue local biodiversity studies.	<ul style="list-style-type: none"> <li>Encourage people to participate in biodiversity studies and examine funding options.</li> </ul>	BWG Councils	Within 12 months and maintain as on-going	<ul style="list-style-type: none"> <li>Increased data, information and awareness on biodiversity in the catchment.</li> </ul>	
	3.1.4 Review extant areas of ecosystems and habitats and ensure their future as areas to enhance biodiversity is protected. If possible, these areas should be consolidated and increased in size as well as rehabilitated and enhanced whilst also allowing public access where appropriate.	<ul style="list-style-type: none"> <li>Review each Council's State of the Environment Reports for documentation regarding conservation areas and ensure these areas are managed and maintained.</li> </ul>	BWG Councils	Within 12 months and maintain as on-going	<ul style="list-style-type: none"> <li>Increased areas of conservation value.</li> </ul>	

## 5.4 BIODIVERSITY ACTION PLAN

Goal 3. Aquatic and terrestrial ecosystems and habitats are restored, rehabilitated, enhanced and protected so as to promote and/or maintain essential ecological processes and biodiversity

OBJECTIVE	ACTIONS	ACTIVITIES	RESPONSIBILITY	TIME FRAME	OUTCOMES
3.1 Enhance and protect the biodiversity of the Cooks River catchment.	3.1.5 Discourage any further development on all natural foreshore areas with re-vegetation potential.  3.1.6 Develop strategies for the management of threatened species.  3.1.7 Encourage the installation of animal houses in appropriate areas.  3.1.8 Coordinate uniform weed strategy with all local governments throughout the catchment.  3.1.9 Examine the possibility of employing pest (weed and feral animals) control officers for the catchment in order to devise and execute strategies and actions for pest management.  3.1.10 Encourage the establishment of nurseries in the LGA's which specialise in the cultivation of local native species for use by councils and the local community.	<p><b>Preservation of Habitats, Protect Areas and Remnant Bushland</b></p> <ul style="list-style-type: none"> <li>Develop an REP.</li> </ul> <p><b>Native Wildlife</b></p> <ul style="list-style-type: none"> <li>Use the Threatened Species Conservation Act, 1995.</li> <li>Pursue donations of wood and liaise with schools and TAFE re building houses in woodwork classes.</li> </ul> <p><b>Pests &amp; Weeds</b></p> <ul style="list-style-type: none"> <li>Investigate innovative, cost-effective ways of dealing with weeds and ensure all councils are informed.</li> <li>Liaise with Dept. of Agriculture and NPWS.</li> <li>Establish nurseries and promote and advertise.</li> </ul>	BWG Councils DUAP	Within 12 months and maintain as on-going	<ul style="list-style-type: none"> <li>Threatened Species Management Strategy developed.</li> <li>Animal houses installed.</li> </ul>
			BWG Councils NPWS	On-going support	<ul style="list-style-type: none"> <li>Threatened Species Management Strategy developed.</li> </ul>
			BWG Councils NPWS Community Groups	1-3 years	<ul style="list-style-type: none"> <li>Animal houses installed.</li> </ul>
			<b>Pests &amp; Weeds</b>		
			BWG Councils Department of Agriculture	1-3 years	<ul style="list-style-type: none"> <li>Cost effective anti-weed strategies are developed and implemented resulting in a reduction in weed infestation.</li> </ul>
			BWG Councils	1-3 years	<ul style="list-style-type: none"> <li>Pest Control Officer employed for Cooks River catchment</li> </ul>
			BWG Councils	1-3 years and maintain as on-going	<ul style="list-style-type: none"> <li>Nurseries established leading to increased native vegetation planting in the catchment.</li> </ul>



## 5.5 CULTURAL HERITAGE

Goal 4: Protection, conservation and enhancement of areas and items of cultural heritage, and respect for the contribution of the Aboriginal people to the catchmen

OBJECTIVE	ACTIONS	ACTIVITIES	RESPONSIBILITY	TIME FRAME	OUTCOMES
4.1 Improved understanding of, and commitment to the conservation, interpretation and appropriate public use of areas and items of cultural heritage.	4.1.1 Undertake the identification and assessment of Aboriginal and non-Aboriginal heritage sites.	<ul style="list-style-type: none"> <li>Compile register of current sites and inspect and document their condition.</li> <li>Investigate any other possible sites.</li> </ul>	NPWS CHWG Councils National Trust of NSW Heritage Council Australian Heritage Commission	1-3 years	<ul style="list-style-type: none"> <li>Register of location and assessment of significant sites.</li> </ul>
	4.1.2 Coordinate available data on restoration projects.		CHWG	Within 12 months and on-going	
4.2 Increased awareness and understanding of the significance of the cultural heritage of the Cooks River catchment.	4.2.1 Develop educational and community information regarding Aboriginal heritage in regard to the use of the land and water resources of the catchment.	<ul style="list-style-type: none"> <li>Produce a Cooks River Catchment Heritage education package.</li> <li>Incorporate educational material into other educational programmes.</li> </ul>	CHWG EWG	1-3 years	<ul style="list-style-type: none"> <li>Heritage information package produced and distributed, with increased community awareness and knowledge of local heritage.</li> </ul>
	4.3 The recognition of the rights and needs of indigenous people and the value of their contribution to the protection of items of cultural value.	4.3.1 Involvement of the Aboriginal people in the management of the river and its catchment.	<ul style="list-style-type: none"> <li>Continue Aboriginal membership of the CMC.</li> </ul>	CMC	Continue

## 5.6 EDUCATION AND AWARENESS ACTION PLAN

Goal 5. An informed and committed community, working to address priority natural resource issues using the principles of ecologically sustainable development

OBJECTIVE	ACTIONS	ACTIVITIES	RESPONSIBILITY	TIME FRAME	OUTCOMES
5.1 Promote and raise awareness of the importance of increasing and maintaining the biological diversity of the Cooks River catchment.	5.1.1 Prepare biodiversity educational material relevant to Cooks River catchment.	<ul style="list-style-type: none"> <li>Consult with Community Biodiversity Network.</li> </ul>	EWG BWG	1-3 years and maintain as on-going	<ul style="list-style-type: none"> <li>Increased awareness and appreciation of biological diversity in the Cooks River catchment.</li> </ul>
5.2 The provision of adequate information to enable the catchment to be managed efficiently.	5.2.1 Establish a database of all relevant community and government organisations in the catchment for use in maintaining on-going, mutually supportive relationships with the CMC. These relationships will form the foundation of the CMC's relationship with the wider community for the purposes of disseminating information, carrying out of works on the ground and political support for the CMC Strategy.	<ul style="list-style-type: none"> <li>Obtain appropriate software e.g. Access on which to construct database.</li> <li>Obtain local government community directories for sourcing information on community and government organisations. e.g. <ul style="list-style-type: none"> <li>Chambers of Commerce</li> <li>Environment Groups</li> <li>Ethnic community organisations</li> <li>Schools</li> <li>Members of Parliament</li> <li>Recreational Clubs</li> <li>State Government Agencies</li> </ul> </li> <li>Engage student (or similar qualified person) to design database and provide training on data entry and retrieval.</li> </ul>	CMC Coordinator	Within 12 months and maintain as on-going	<ul style="list-style-type: none"> <li>Enhanced ability of CMC to maintain regular and timely contact with the community and government</li> <li>More effective distribution of information on the river.</li> <li>Opens up prospects for more effective dialogue between CMC and interested community groups.</li> </ul>
	5.2.2 Clarify the role of the NSW Government in monitoring of water quality in view of the Water Reform agenda and include the preparation of a protocol and mechanisms for public reporting.	<ul style="list-style-type: none"> <li>Construct database of water quality data from all sources throughout catchment so that all data is readily available from one source.</li> </ul>	EWG WWG EPA DLWC Sydney Water Councils	Within 12 months and maintain as on-going	<ul style="list-style-type: none"> <li>Role of NSW Government in water quality monitoring clarified.</li> </ul>



## 5.6 EDUCATION AND AWARENESS ACTION PLAN

Goal 5. An informed and committed community, working to address priority natural resource issues using the principles of ecologically sustainable development

OBJECTIVE	ACTIONS	ACTIVITIES	RESPONSIBILITY	TIME FRAME	OUTCOMES
5.2 The provision of adequate information to enable the catchment to be managed efficiently.	5.2.3 Communicate results of water management research to the community, policy-making bodies and stakeholders.	<ul style="list-style-type: none"> <li>Gather and distribute information to CMC members and general community via website and Cooks River Newsletter.</li> </ul>	EWG Councils	Within 12 months and maintain as on-going	<ul style="list-style-type: none"> <li>Information distributed.</li> </ul>
	5.2.4 Consolidate relevant publications and reports into a package for inclusion in local studies library collections throughout the catchment.	<ul style="list-style-type: none"> <li>Consult with other working groups.</li> </ul>	EWG Councils	Within 12 months and maintain as on-going	<ul style="list-style-type: none"> <li>Package prepared and distributed.</li> </ul>
	5.2.5 Promote and maintain CMC website and add and update information regularly.	<ul style="list-style-type: none"> <li>Consult with other working groups.</li> </ul>	EWG	Continue	<ul style="list-style-type: none"> <li>CMC website updated and maintained.</li> </ul>
	5.2.6 Facilitate access to information about the land and water resources of the catchment to the community, policy-making bodies and management stakeholders through a number of sources.	<ul style="list-style-type: none"> <li>Hold copies of other related organisations' publications for public use.</li> <li>Publish a newsletter.</li> <li>Provide regular media releases.</li> <li>Include information with rate notices, including in community languages.</li> </ul>	EWG Councils	Within 12 months and maintain as on-going	<ul style="list-style-type: none"> <li>Increased information distribution via a variety of methods.</li> </ul>
	5.2.7 Host a regular forum to report to the community and other interested parties on CMC activity in the catchment and on "The State of the River".		EWG CMC Coordinator	Staged over 12 months from completion of database	<ul style="list-style-type: none"> <li>Increased dissemination of information through using existing organisations and building networks</li> <li>New groups becoming involved in supporting CRCMC objectives.</li> <li>Awareness of how a broad spectrum of groups can contribute to improving catchment.</li> <li>Identifying people who may wish to become involved in CRCMC activities.</li> </ul>

## 5.6 EDUCATION AND AWARENESS ACTION PLAN

Goal 5. An informed and committed community, working to address priority natural resource issues using the principles of ecologically sustainable development

OBJECTIVE	ACTIONS	ACTIVITIES	RESPONSIBILITY	TIME FRAME	OUTCOMES
5.2 The provision of adequate information to enable the catchment to be managed efficiently.	5.2.8 Host specific-interest forums for groups with common interests, including: - planners/engineers, landscape gardeners, council/commercial waste management staff, teachers, Chambers of Commerce, bushland groups etc.		EWG CMC Coordinator	Staged over 12 months from completion of database	<ul style="list-style-type: none"> <li>At least 6 forums held per year.</li> </ul>
5.3 Raise community awareness of Total Catchment Management and promote and provide opportunities for community education and participation.	5.3.1 Education programmes to run concurrently with the undertaking of catchment-based audits including the adoption and implementation of best management practices for the minimisation of water pollution by industry, developers, residents and waterway users.		EWG Councils	1-3 years and maintain as on-going	<ul style="list-style-type: none"> <li>Education programme implemented.</li> </ul>
	5.3.2 Encourage TAFE and universities to assist with technical and research needs. Provide support and practical assistance for projects.	<ul style="list-style-type: none"> <li>Identify TAFEs and universities with courses relevant to catchment issues – including environmental sciences, planning, social sciences, communications, arts, leisure studies and horticulture.</li> <li>Decide on possible topics for research or activities suitable for practicum.</li> <li>Develop plan within CRCMC to write proposals for research/activities, supervise and support students.</li> <li>Contact heads of relevant TAFE's and universities to outline work on CRCMC and possible student involvement.</li> </ul>	EWG CMC Coordinator Councils	Within 12 months and maintain as on-going	<ul style="list-style-type: none"> <li>Specific research undertaken.</li> </ul>



## 5.6 EDUCATION AND AWARENESS ACTION PLAN

Goal 5. An informed and committed community, working to address priority natural resource issues using the principles of ecologically sustainable development

OBJECTIVE	ACTIONS	ACTIVITIES	RESPONSIBILITY	time-frame	OUTCOMES	
5.3 Raise community awareness of Total Catchment Management and promote and provide opportunities for community education and participation.	5.3.3 Regularly publicise improvements in the catchment. The form of the publicity generated will vary depending on the audience and the project.	<ul style="list-style-type: none"> <li>Media releases.</li> <li>Newsletter.</li> <li>Provide copy for other related organisations' publications.</li> </ul>	EWG Councils	Within 12 months and maintain as on-going	<ul style="list-style-type: none"> <li>Generating publicity for improvement works assists the community to gain an appreciation of the positive future for the river as opposed to the prevailing negative perceptions.</li> </ul>	
	5.3.4 Provide information to community members from non-English speaking backgrounds in cooperation with councils.	<ul style="list-style-type: none"> <li>Include information to accompany rates notices etc.</li> <li>Prepare brief message to the community on the importance of the river and translate into community languages.</li> <li>Seek agreement of councils to participate in distribution of message.</li> </ul>	EWG Councils	12 months from adoption of strategy	<ul style="list-style-type: none"> <li>CMC profile raised and increased public awareness.</li> </ul>	
	5.3.5 Involvement of community groups, organisations and individuals in actions to improve the impacts of human activities on the river and its catchment.	<ul style="list-style-type: none"> <li>Facilitate the provision of Streamwatch kits for schools.</li> <li>Organise school participation within the catchment publicising the results.</li> <li>DUAP &amp; EPA (1997) What We Need Is an Education Programme.</li> </ul>	EWG WWG Streamwatch	Within 12 months and maintain as on-going	<ul style="list-style-type: none"> <li>Increased involvement of community groups.</li> </ul>	
	5.3.6 Ensure all community groups, governments and business stakeholders are made aware of CMC strategies and implementation.			CMC Coordinator	1-3 years and maintain as on-going	<ul style="list-style-type: none"> <li>All community groups, governments and business stakeholders aware of CMC strategies and implementation.</li> </ul>

## 5.6 EDUCATION AND AWARENESS ACTION PLAN

Goal 5. An informed and committed community, working to address priority natural resource issues using the principles of ecologically sustainable development

<p><b>5.3</b> Raise community awareness of Total Catchment Management and promote and provide opportunities for community education and participation.</p>	<p>5.3.7 Support and encourage the development of local action groups and provide support for existing groups to work on projects.</p>	<p>CMC Coordinator Councils</p>	<p>On-going</p>	<ul style="list-style-type: none"> <li>• Increased support for local action groups.</li> </ul>
	<p>5.3.8 Sponsorship of local actions which involve TCM.</p>	<p>CMC Coordinator Councils</p>	<p>On-going</p>	<ul style="list-style-type: none"> <li>• Increased number of actions which involve TCM.</li> </ul>



## Appendix A

### CRCMC Contact Details and Members

CRCMC members at 30 August, 1999.

David Beynon	Landholder/Landuser (Chair)
Bryan Hall	Landholder/Landuser (Deputy Chair)
James Carey	Bankstown Council
Gordon Downey	South Sydney City Council
Don Elvy	Landholder/Landuser
Judy Finlason	Landholder/Landuser
Bart Foley	DLWC
Cr John Griffin	Hurstville Council
Kieran Horkan	EPA
Kathleen King	Landholder/Landuser
John Murn	Landholder/Landuser
Cindy Cunningham	Rockdale City Council
Craig Sawyer	Strathfield Council
Nola Taylor	Environmental Interest
David West	Landholder/Landuser
Annette Williams	Sydney Water
Dominic Wykanak	Landholder/Landuser

#### *Staff:*

Susan Hobleby	Project Officer
Jill Merrin	Acting Coordinator
Rhonda Weir	Clerical Officer

#### *Contact Details:*

Telephone	(02) 9895 7153
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Postal address	PO Box 786, Parramatta, NSW 2124

## REFERENCES AND FURTHER READING

### Cooks River Catchment Plans, Reports and Strategies

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## GLOSSARY

ANZECC	Australian and New Zealand Environment and Conservation Council
CMC	Catchment Management Committee
CRC	Cooks River Catchment
CRCMC	Cooks River Catchment Management Committee
DCP	Development Control Plan
DLWC	Department of Land and Water Conservation
DPWS	Department of Public Works and Services
DUAP	Department of Urban Affairs and Planning
EPA	Environment Protection Authority
IGAE	Intergovernmental Agreement on the Environment
ESD	Ecologically Sustainable Development
LEP	Local Environment Plan
RTA	Roads and Traffic Authority
SCC	Sydney Coastal Councils
SCMCC	State Catchment Management Co-ordinating Committee
SEPP	State Environmental Planning Policy
SREP	State Rivers and Estuaries Policy
SSROC	Southern Sydney Regional Organisation of Councils
TCM	Total Catchment Management
WAC	Water Advisory Council