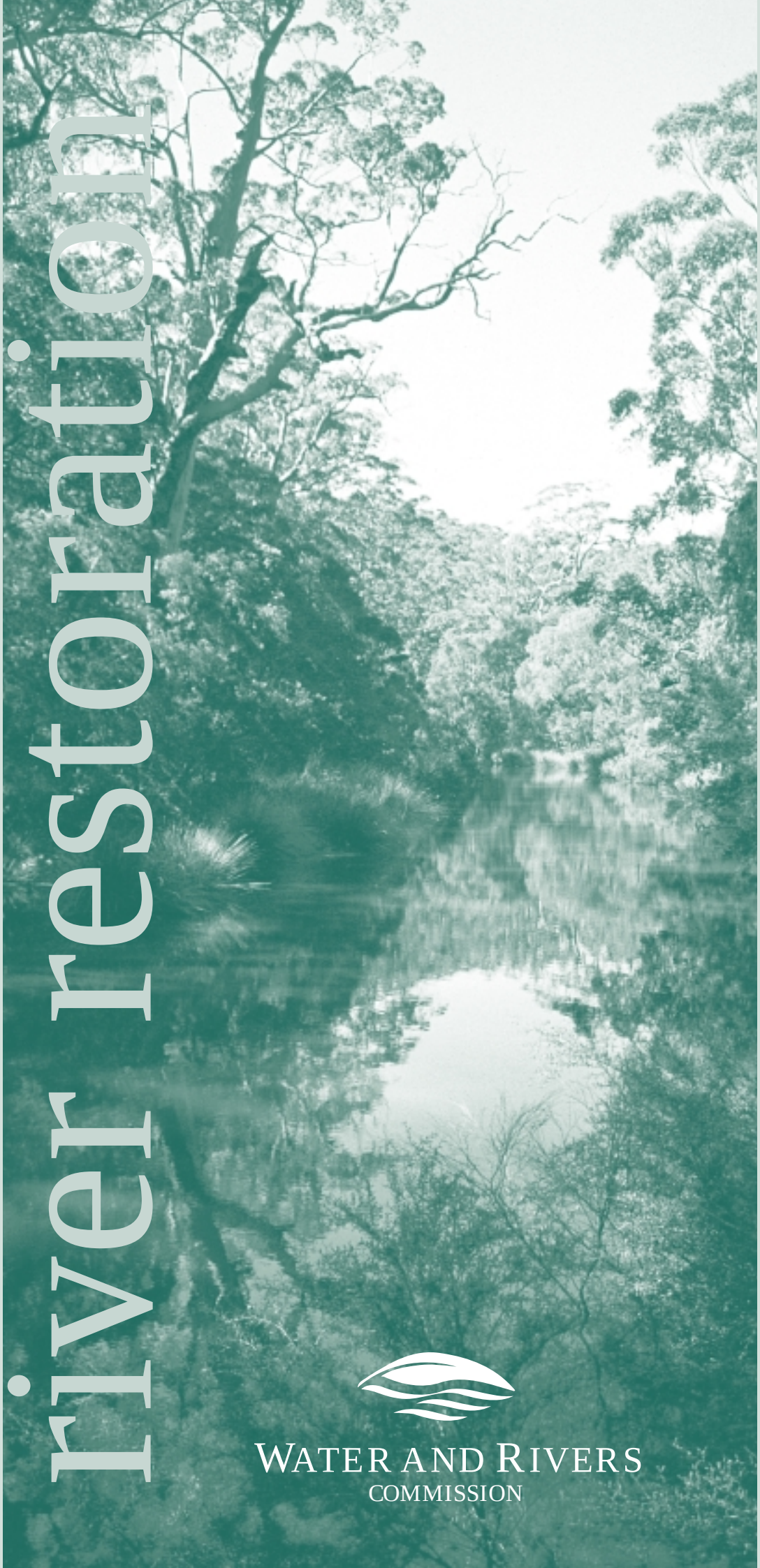

Planning for Waterways Management

An Overview

WATER AND RIVERS COMMISSION

February 2001
Report No. RR 11

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PLANNING FOR WATERWAYS MANAGEMENT

An Overview

Prepared by
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Ingrid McCarthy,
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Jointly funded by

Natural Heritage Trust

WATER AND RIVERS COMMISSION

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Foreword

Many Western Australian rivers are becoming degraded as a result of human activity within and along waterways and through the off-site effects of catchment land uses. The erosion of foreshores and invasion of weeds and feral animals are some of the more pressing problems. Water quality in our rivers is declining with many carrying excessive loads of nutrients and sediment and in some cases contaminated with synthetic chemicals and other pollutants. Many rivers in the south-west region are also becoming increasingly saline.

The Water and Rivers Commission is responsible for coordinating the management of the State's waterways. Given that Western Australia has some 208 major rivers with a combined length of over 25 000 km, management can only be achieved through the development of partnerships between business, landowners, community groups, local governments and the Western Australian and Commonwealth Governments.

The Water and Rivers Commission is the lead agency for the Waterways WA Program, which is aimed at the protection and enhancement of Western Australia's waterways through support for on-ground action. One of these support functions is the development of river restoration literature that will assist Local Government, community groups and landholders to restore, protect and manage waterways.

This document is part of an ongoing series of river restoration literature aimed at providing a guide to the nature, rehabilitation and long-term management of waterways in Western Australia. It is intended that the series will undergo continuous development and review. As part of this process any feedback on the series is welcomed and may be directed to the Catchment and Waterways Management Branch of the Water and Rivers Commission.

Planning for Waterways Management: An Overview

Purpose of this document

Planning for waterways management is complex and occurs at a variety of spatial scales, including statewide waterways planning, regional planning, catchment planning and local river action planning. The aim of this document is to contextualise waterways management planning within the framework of natural resource management and to identify key stakeholders and their roles in waterways planning. This document also provides an outline of the principles by which planning for waterways management should occur and is the background to more detailed documents that make recommendations for waterways planning at the following scales:

- Regional (e.g. Regional strategy documents; Water and Rivers Commission, River Restoration Report RR 12);
- Catchment (e.g. Waterways management programs and catchment plans; Water and Rivers Commission, River Restoration Report RR 13);
- Local (e.g. River Action Plans; Water and Rivers Commission, River Restoration Report RR 14).

Waterways and their management in context

Waterways comprise rivers, creeks, estuaries, inlets, floodplain wetlands, coastal lagoons and embayments. They are often intricate ecological systems that respond in complex ways to changes in environmental conditions. Waterways obtain their water from catchments and therefore the geology, geomorphology and biophysical characteristics of the catchment influence the physical and chemical characteristics of the receiving waterbodies. The strong linkage between waterways and catchments makes it impossible to effectively manage waterways in isolation.

Human activities within catchments can influence the ecology, hydrology and geomorphology of waterways (see Table 1). Diffuse and point source input of nutrients and other pollutants to waterbodies, clearing of riparian vegetation, channelling and the diversion of water directly influence the quality and/or quantity of water available to waterways. Land clearing and subsequent urban and agricultural development can result in increased discharge, salinisation and erosion.

Waterways are an integral part of the heritage of both indigenous and non-indigenous Western Australian communities and are valuable assets for our State, both socially and economically. They supply water for urban, agricultural, industrial and pastoral uses, and support commercial and amateur fisheries. They also provide a focus for the aquaculture, recreation and tourism industries. These services are threatened where the perceived value of waterways differs across community, industry and government and where there are conflicting and overlapping demands for land and water use. In order to conserve the services provided by waterways it is important to balance competing needs and develop management objectives based on the values of all interested parties (stakeholders).

Integrated Catchment Management (ICM) is aimed at the cooperative management of our natural resources (land, water and biodiversity) on a catchment wide scale. It is a management process that enables government, industry and the whole community to work together in pursuit of agreed objectives for the management of natural resources. ICM provides a balance between the competing needs for social and economic development and the protection of natural resources. In Western Australia, ICM is not a formalised framework or bureaucracy, but rather a concept of coordinating activity to improve the management of natural resources. ICM takes into account a wide range of environmental issues within a catchment including those that affect waterways.

ICM is a critical component of Integrated Natural Resource Management (INRM), which recognises the broad array of natural resources in the wider context of sustainability. ICM also provides a framework for the operation and implementation of on-ground actions through River Action Plans.

Table 1. Water resource management issues.

Theme	Issue	Condition	Cause/Pressure
Ecological	Instream and riparian vegetation degradation.	Declining riparian vegetation. Exposed and eroded foreshores. Erosion and sedimentation. Ecosystem decline. Fragmentation. Loss of diversity.	Livestock grazing. Salinisation and waterlogging due to clearing. Inappropriate fire regimes. Conflicting and unsustainable use of the riparian zone.
	Exotic plant and animal invasions.	Weed infested foreshores. Clogged waterways. Loss of native vegetation. Altered stream ecology. Ecosystem degradation. Threat to native species by predation and disease.	Weed introductions. Livestock grazing. Aquaculture escapees. Existing pests. Garden escapees.
	Nutrient enrichment.	Declining water quality. Algal blooms – macro and micro. Fish kills. Loss of seagrass. River pool stagnation. Anoxic events.	Nutrient and organic matter transport from catchments.
	Point source pollution.	Declining water quality. Algal blooms – macro and micro. Fish and invertebrate fauna kills. Loss of seagrass. River pool stagnation. Anoxic events. Environmental contamination.	Discharge of pollutants. Biocide use.
Hydrological	Stream salinisation.	Decreased useability of water. Dying vegetation. Changes from freshwater to saltwater conditions. Salinised stream water quality. Exposed foreshores. Loss of diversity.	Altered catchment hydrology brought about by clearing.
	Waterlogging and inundation.	Dying vegetation. Increased extent of water logging along waterways. Stagnation.	Altered catchment hydrology brought about by clearing. Inadequate drainage. Sedimentation of waterways.

Theme	Issue	Condition	Cause/Pressure
Hydrological cont'd.	Stream flow changes.	Declining basal flows. Vacant niches for invasive species. Blockage to fish passage. Altered flow regimes. Drowned river valleys. Altered timing, pattern and volume of flow. Loss of wetland and floodplain connection. Altered stream ecology.	Damming of streams. Building weirs, culverts and crossings. Pumping from streams and wetlands. Pumping from streams and wetlands. Water drainage and extraction. Increased groundwater levels.
	Flooding.	Increased flood frequency. Increased flood damage. Use of floodplain for development. Erosion and avulsions.	Inappropriate floodplain development.
	Drainage.	Degraded drains. Erosion and sedimentation. Weed infestation. Eutrophication of downstream waterways.	Rural and urban drainage. Channel straightening and desnagging.
Geomorphological	Channel changes.	Channel widening and deepening. Changes to riffle patterns. In-stream erosion and sedimentation. Floodplain erosion. Loss of river pools.	Altered catchment discharge regime and loss of vegetation. Direct excavation of channel bed.

Natural Resource Management (NRM) is defined as the ecologically sustainable management of land, water and biodiversity resources of the State for the benefit of existing and future generations, and for the maintenance of the life support capability of the biosphere. It does not include mineral or marine resources.

INRM activities are encouraged through federal sponsorship (i.e. Natural Heritage Trust), which advocates a regional approach to the development of strategies for the implementation of NRM within the Commonwealth framework (e.g. National Water Quality Management Strategy) and State policy (e.g. The Salinity Strategy).

Regions are recognised as a critical scale for the strategic coordination of NRM. This is because many biophysical processes and interactions may be dealt with at this scale. In addition, coordination between stakeholders is often most efficient at this scale and there are "economies of scale" at a regional level. In Western Australia there are currently seven NRM regions; South Coast, South West, Swan-Canning, Avon, Northern Agricultural, Pastoral/Rangelands and Kimberley (see Figure 1). For each region, at least one Regional NRM Strategy is proposed or being developed. Depending on the size of the region and the complexity of issues, subregional strategies may also be developed. This is an evolving process and the number of regions and their boundaries could change.

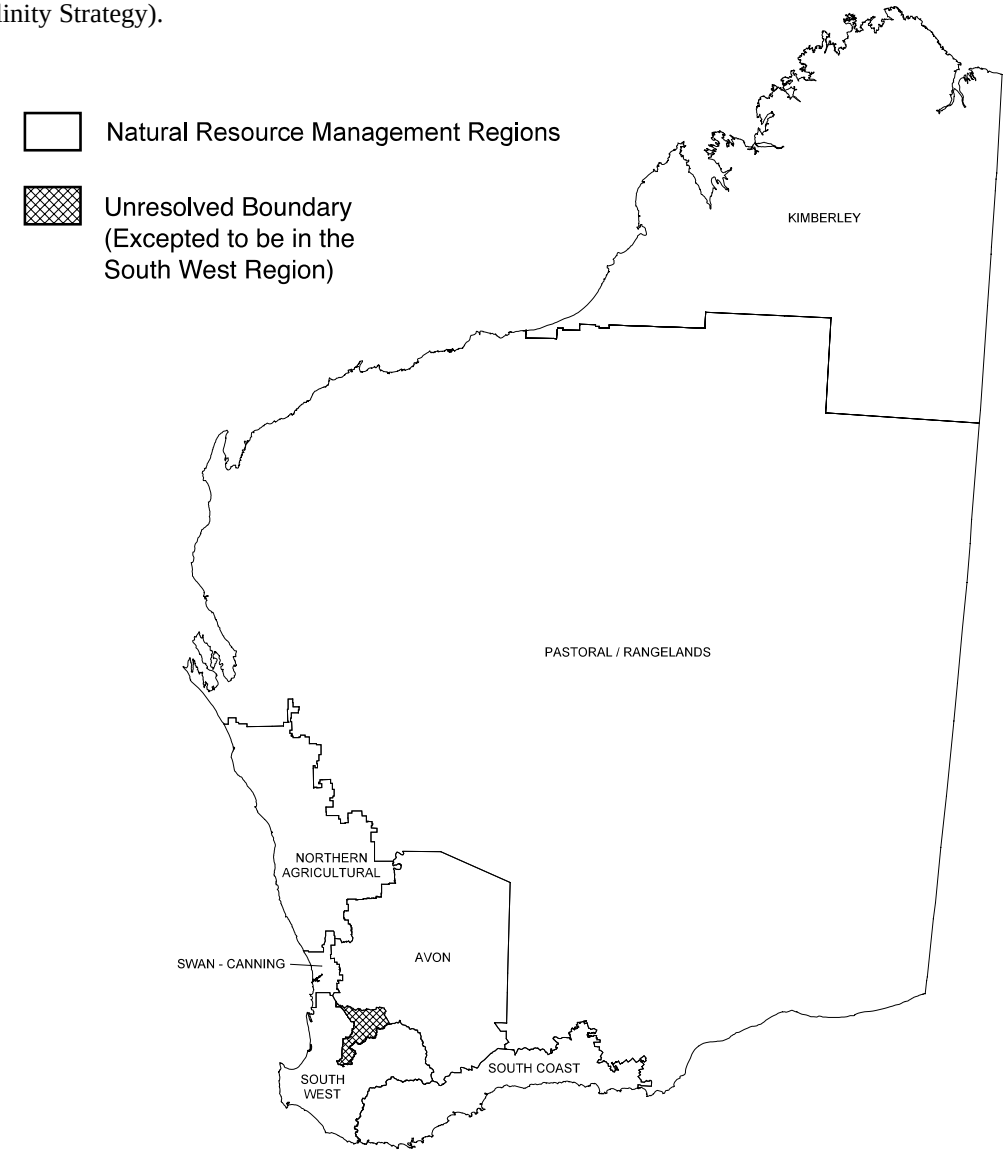


Figure 1. In Western Australia there are currently seven Natural Resource Management (NRM) regions; South Coast, South West, Swan-Canning, Avon, Northern Agricultural, Pastoral/Rangelands and Kimberley. It is important to note that regions and their boundaries may change as NRM evolves in Western Australia.

The Western Australian Government has six priority programs for natural resource and environmental management in Western Australia. These are:

- State Salinity Strategy;
- Biodiversity Conservation;
- Waterways WA;
- Rangelands Management;
- World Heritage; and
- Coast and Clean Seas.

All these programs depend on partnerships between the community, landholders and local government to plan and implement on-ground action, coordinated where appropriate through cooperatively developed regional and catchment strategies.

The Waterways WA Program is the State's first statewide waterways protection and enhancement program and aims to support the sustainable management of WA's river systems, including associated wetlands. The Water and Rivers Commission is the lead agency for the Waterways WA program, which will develop a statewide framework for waterways management and support on-ground planning and works. The Commission recently released a draft policy paper defining the long-term vision and objectives for waterways across the State (*Water and Rivers Commission Statewide Policy No. 4*). The paper articulates principles for waterways management and outlines the approach through which waterways objectives may be achieved.

The process of planning for waterways management

Waterways management planning is encompassed in plans produced at a variety of scales including:

- State (e.g. Statewide Waterways Management Strategy);
- Regional (e.g. Regional strategy documents);
- Catchment (e.g. Waterways Management Programs and catchment plans); and
- Local (e.g. River Action Plans).

The Water and Rivers Commission (WRC) is responsible for the development of a Statewide Waterways Management Strategy, while a range of organizations may undertake waterways planning at the regional, catchment and local scale. For this reason, the Water and Rivers Commission has made available detailed documents that suggest approaches to waterways planning at a range of scales (see Water and Rivers Commission, River Restoration Reports RR 12, 13 and 14). Regardless of the scale of planning the development of a plan should follow the plan-act-review cycle (see Figure 2) whereby goals and objectives are adapted as the outcomes of management options are monitored and evaluated, and as new information and understanding is gained. The process towards the development of a document may vary depending upon the planning scale. However, there are a number of important principles that should guide approaches to NRM planning generally and waterways planning specifically (see Figure 3).

Principles that guide waterways management planning

Community support and understanding

- The acceptance of management options will only occur if the community has an understanding of the pressures that have resulted in the current condition of the waterway.
- The community has to be involved in deciding upon the vision, objectives and strategies for management in order for the plan to be relevant and accepted.
- The community should be involved in deciding upon trade-offs between short and long-term objectives in management (e.g. short term economic gain versus long term environmental sustainability).

Gain the best-available understanding of the waterway system

- An understanding of the system will facilitate informed decision making and planning.
- A multidisciplinary approach encompassing a broad range of biological, physical, and socio-economic views is essential for true long-term sustainability.
- Recognise the gaps in knowledge that may prevent the attainment of the most effective management.

Figure 2. Waterways management planning should follow the plan-act-review cycle.

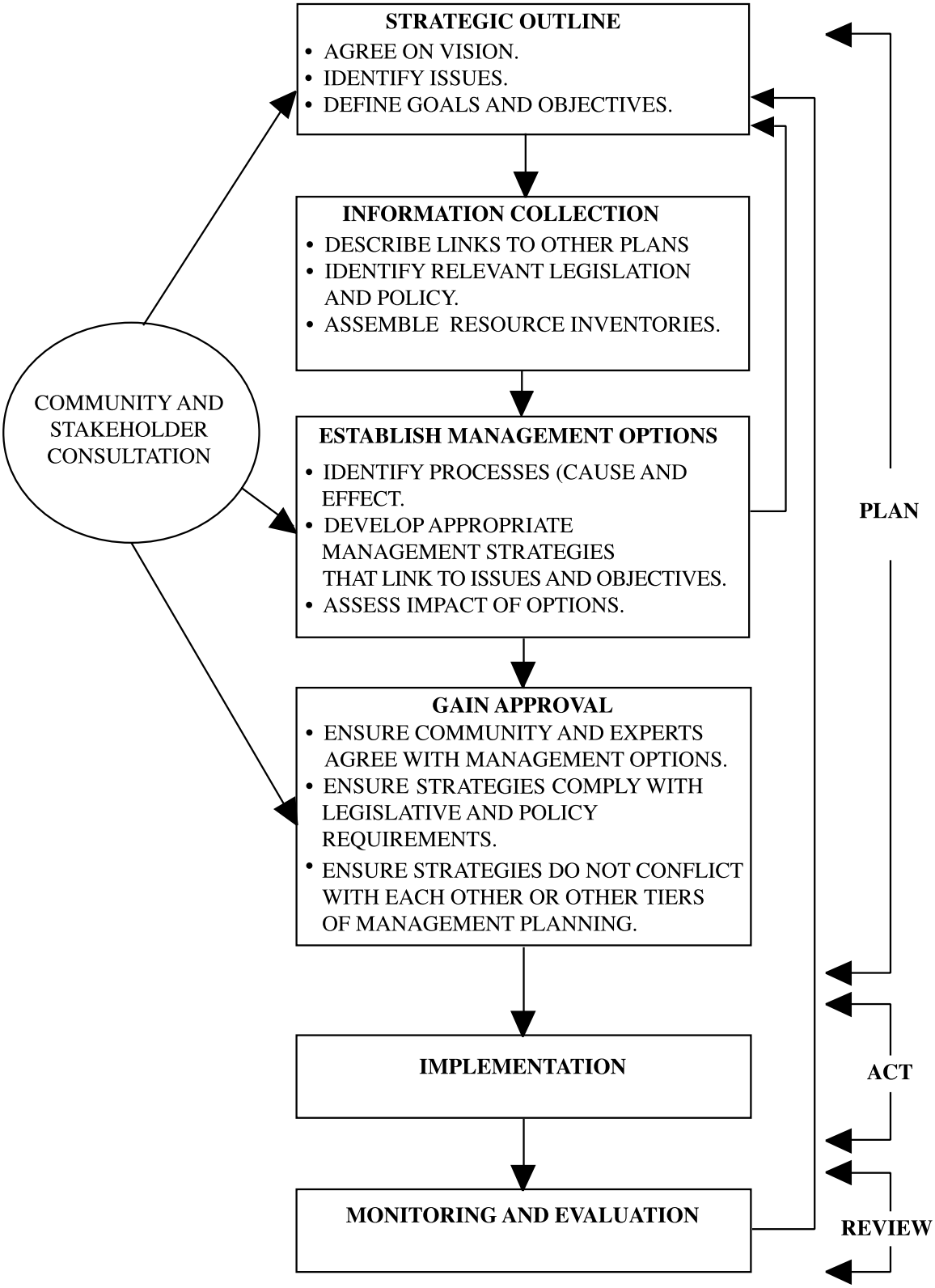
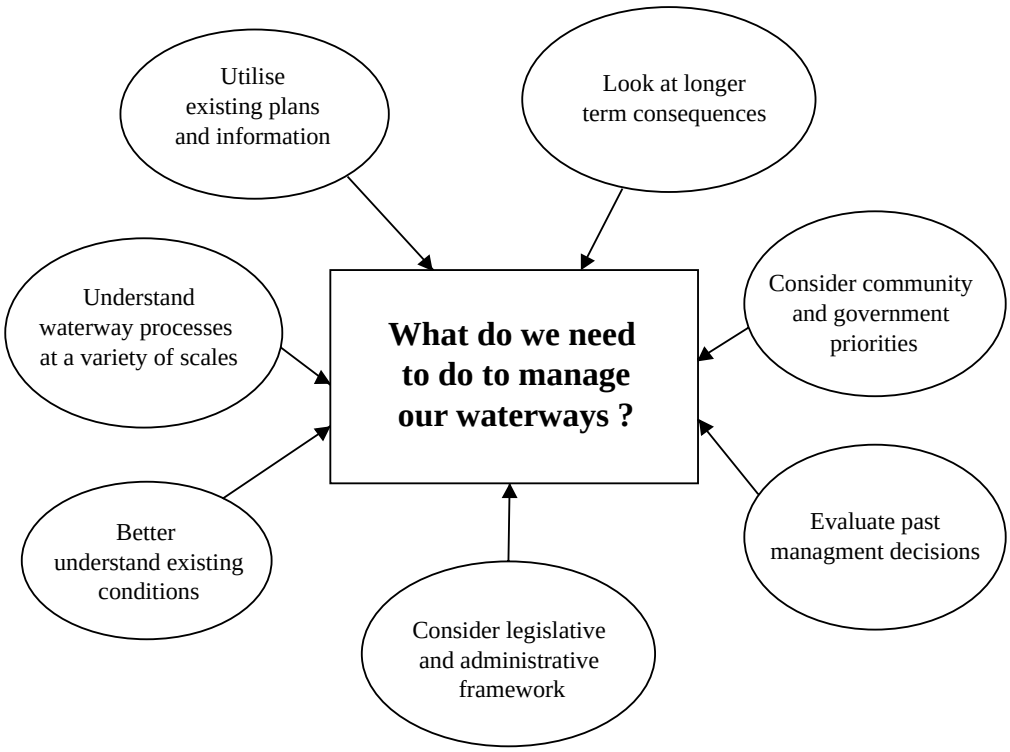


Figure 3. Waterways planning principles.



Work with the system

- Plan management options within appropriate spatial and temporal scales.
- It is usually more effective to protect reaches of a waterway that remain in good condition, than to spend large amounts of money trying to rehabilitate parts that are already degraded. In effect protection is the best form of rehabilitation.
- The focus in degraded areas should be on those components that show the greatest potential for recovery.
- Emphasis should be given to sites deteriorating quickest.
- Adopt a conservative management approach where information or understanding is limited.

Consistency with other plans and strategies

- The waterway management plan should acknowledge, and where possible be in keeping with, existing management strategies prepared at a range of scales (see Figure 4).

Evaluate past management decisions

- The waterway management plan should learn from and build on what has gone before.

Consider legislation, regulations and policy

- The objectives and strategies within a plan should accord with State laws and regulations as well as Government policy.

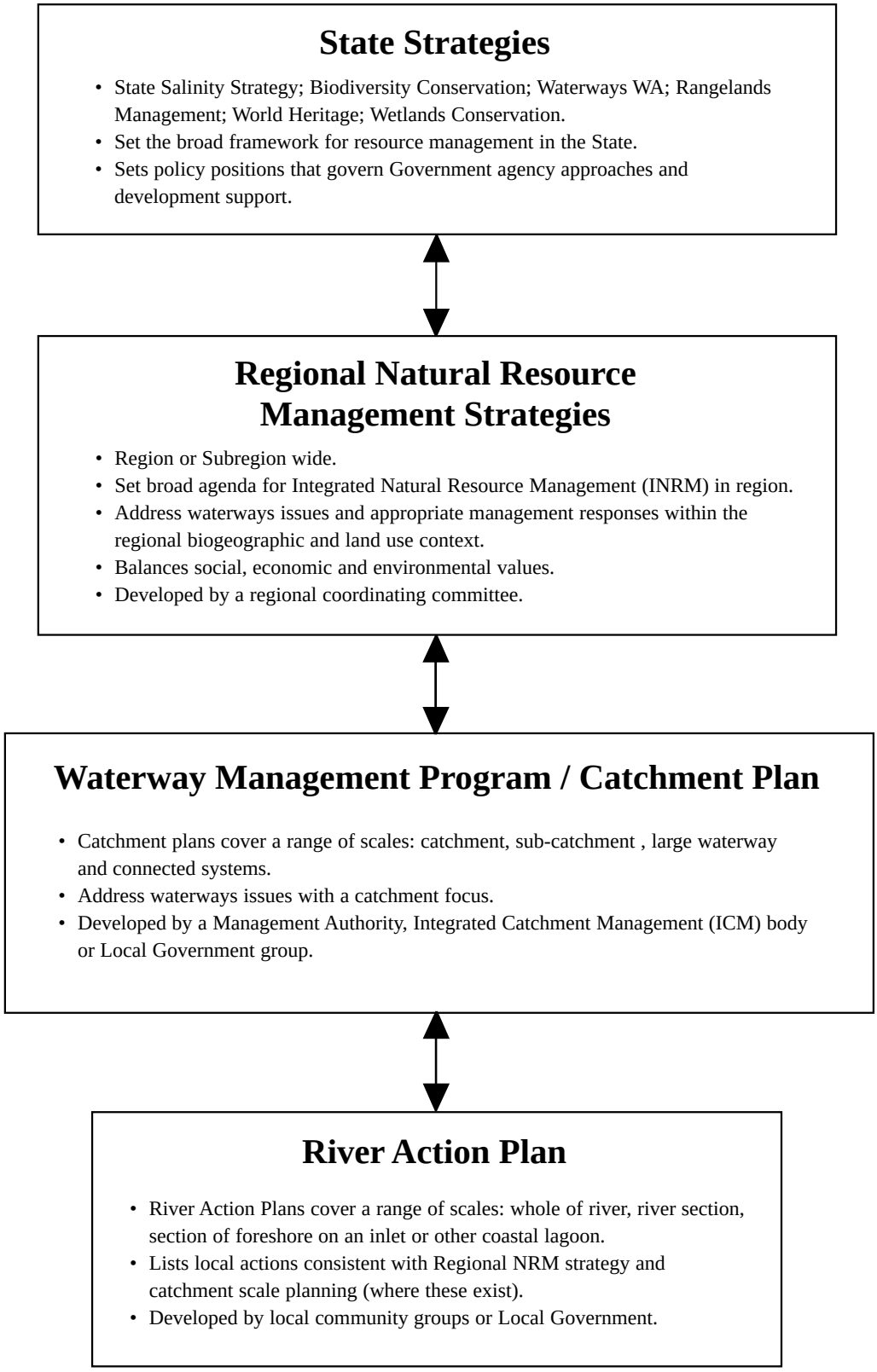
Be internally consistent

- The objectives and strategies should not conflict with one another, otherwise implementation of the plan will be difficult if not impossible.
- Each objective or strategy needs to mesh with the others so that the plan works as an integrated whole to achieve the vision.

Consider social, cultural and scientific requirements

- Objectives and strategies need to be understood and accepted by the community and also need to be technically and scientifically correct and achievable.

Figure 4. Planning linkages and roles from the State to local levels.



- Where an issue is highly contentious, or where there is scientific uncertainty, a process of facilitation and negotiation may be required.

Key organisations in waterways planning

There are a large number of government and community organisations associated with waterways management planning. Some of the key organisations are listed below.

Government

Water and Rivers Commission (WRC)

The Water and Rivers Commission is the government agency with the overall responsibility for management of water resources of Western Australia. The Commission operates under the *Water and Rivers Commission Act 1995*, and has the general functions of assessing, planning and undertaking the management of water resources. In addition, the Commission has water resources conservation, protection and management functions vested in it by various written laws, including the Waterways Conservation Act 1976. Under Section 23 of the Act, it is the duty of the Commission (amongst other things):

- to preserve or enhance the quality of the environment and the amenities of the waters and of the associated land to which the powers of the Commission apply;
- to provide advice and disseminate knowledge on the conservation and good management of rivers, inlets, and estuaries and of, land associated with them; and
- in so far as that is practicable, to act in concert with, consult and make arrangements and agreement with relevant local government authorities, residents and other persons affected by the operation of this Act.

The WRC is the lead agency for the development of a policy and strategy for the protection and enhancement of waterways across the State.

The Commission is also the supporting agency for Waterways Management Authorities, providing policy direction and coordination, as well as administrative services, including overseeing restoration programs.

Waterways Management Authorities

The *Waterways Conservation Act 1976* provides for the management of waterways in need of coordinated management through the declaration of Management Areas with defined boundaries and the establishment of Management Authorities. Waterways Management Authorities manage their sections of waterway in accordance with the powers of the Act, the State-wide policies developed by the WRC and regional/local management guidelines and priorities that they establish for themselves. The latter must be consistent with Commission policy.

The first three Waterways Management Authorities that formed had their management areas delineated by cadastral boundaries immediately adjacent to the waterway. The recently formed Waterways Management Authorities have management areas that cover their respective catchments (see Table 2). This recognises that without proper catchment management, many waterways could not be effectively managed. WaterwaysManagement Authorities are also moving towards fuller partnerships with newer non-statutory community-based catchment groups to promote INRM.

Table 2. Waterways Management Authorities and their management areas.

Management Authorities	Management Area
Peel Inlet Management Authority (PIMA)	Peel Inlet and Harvey Estuary, Lower Serpentine, Murray and Harvey Rivers and immediate associated lands.
Leschenault Inlet Management Authority (LIMA)	Leschenault Estuary, Lower Collie, Brunswick and Preston Rivers and associated lands.
Albany Waterways Management Authority (AWMA)	The Albany waterways and catchment (Princess Royal Harbour, Oyster Harbour, King George Sound and associated rivers).
Avon River Management Authority (ARMA)	Avon River inner catchment.
Wilson Inlet Management Authority (WIMA)	Wilson Inlet and associated rivers and catchment.

The responsibilities of a Management Authority in accordance with the Act are presented below.

Under Section 26(3) of the Act, the Management Authority shall have responsibility for the initial preparation and constant review of the proposals for any management program related to its area, and shall act in consistency with that management program.

Under Section 35 of the Act, the Management Authority may cause to be prepared a detailed documented program of the operations that are to be undertaken pursuant to the Act – a Management Program - for the Management Area under its control and to periodically review that Program. The Program is generally prepared as a guide for the operations of the Management Authority or a 'statement of intent'.

The Management Authority may also develop working plans or "action plans" for the improvement, development and maintenance of the waters and associated land, the prevention and control of fires, the public utilisation of the area, the study, care and restoration of the natural environment, the conservation of indigenous flora and fauna and such other matters as the Management Authority and the Commission recommend and the Minister approves.

Swan River Trust

The Swan River Trust was established under the *Swan River Trust Act 1988* to manage the Swan-Canning River system. The Trust has overall planning, protection and management responsibility for the waters of the Swan and Canning rivers and adjoining parks and recreation reserves.

Agriculture Western Australia

The role of this agency is to improve agricultural productivity, foster new and more diverse forms of farming and promote sustainable agriculture. The agency also administers the *Soil and Land Conservation Act 1945*. The Act provides for the Commissioner of Soil Conservation to be responsible for the prevention and mitigation of land degradation on rural zoned land.

Under the Act the agency has a statutory function to support Land Conservation District Committees (see below).

Agriculture WA operates an agricultural protection program. An Agriculture Protection Board (APB) exists to safeguard WA's rural industries and natural resources from certain deleterious plants, animals and diseases. The APB is a statutory body that administers the *Agricultural and Related Resources Protection Act 1976*. The act enables the declaration of weeds that impact on agricultural values in various areas of the state.

Western Australian Planning Commission (WAPC) and the Ministry for Planning (MfP)

The WAPC was established under the *Western Australian Planning Commission Act 1985*. It is the statutory and decision making authority on land use planning matters in Western Australia. The WAPC guides and manages land use planning and administers and reviews planning legislation. The MfP is the agency that provides planning and technical advice to the WAPC and has delegated authority on some aspects of planning in local areas. The WAPC and MfP contribute to waterways management through the development of regional strategies, approval of and advice on new Town Planning Schemes and amendments, subdivision control, development policy and coastal planning and management. The Ministry for Planning is responsible for the administration of the *Town Planning and Development Act 1928*.

Department of Land Administration (DOLA)

DOLA administers unvested (or vacant) Crown land and gazetted reserves, producing maps and remote sensing information of topographic features of all lands of Western Australia. It administers the *Land Administration Act 1997, Transfer of Land Amendment Act 1996* and *Registration of Deeds Act 1856*, but under these Acts have no specific responsibilities for the management of land or water. However, certain sections of the *Land Administration Act 1997* are relevant to the management of foreshore reserves in vacant Crown land. DOLA also administers the process of setting lease conditions (e.g. pastoral leases) which may address waterways management issues.

DOLA also has responsibility for the Western Australian Land Information System (WALIS) Secretariat and map production in general which play significant supporting roles in NRM. WALIS is the State's resource information database. An integrated system ensures that the information gathered by the various agencies is readily accessible and useable by land managers.

Environmental Protection Authority (EPA) and Department of Environmental Protection (DEP)

The EPA was established under the *Environmental Protection Act 1986* for the protection, control and abatement of environmental pollution and for the conservation, preservation and protection of the environment. The DEP is the agency that provides technical support to the EPA and carries out many of the protection and conservation activities prescribed by the Act.

If a decision making authority considers that a proposed development is likely to have a significant impact on the environment, it must refer the proposal to the EPA for environmental impact assessment. The EPA can also call in a proposal that has been brought to its attention. The EPA determines the type and level of assessment, which may be a simple informal assessment or a formal assessment.

The EPA also has the powers to control, prevent and abate pollution on behalf of the Minister for the Environment Heritage and Water Resources, by issuing licences, works approvals and notices. These powers can be delegated to other government agencies.

Department of Conservation and Land Management (CALM)

CALM has a primary responsibility to conserve WA's wildlife and manage public conservation estate. CALM administers the *Conservation and Land Management Act 1984* and the *Wildlife Conservation Act 1950*. It manages State Forest, timber reserves, national parks and nature reserves. The department assists the Conservation Commission, Marine Parks and Reserves Authority and Marine Parks and Reserves Scientific Advisory Committee carry out their statutory functions. They also work closely with the Forest Products Commission to ensure activities in State Forest and Timber reserves are consistent with protection of the flora and fauna community, nature conservation, recreation, cultural catchment and physical values.

Regional Development Commissions

Regional Development Commissions are government funded bodies that promote, facilitate and assist in the economic or social development of their regions. Regional Development Commissions are supported through the Department of Commerce and Trade.

Port Authorities

Port Authorities are statutory bodies proclaimed under their own Acts (e.g. *Albany Port Authority Act 1926*). They are responsible for the control of their respective ports and for planning, construction and maintenance of port facilities and provision of port services. They may also lease land within the port area and promote their services to increase business.

Department of Transport

The Department of Transport has statutory responsibility relating to marine and river waters, specifically to provide for efficient and safe boating. The Department may construct, provide and maintain facilities and services on land and water to meet the needs of recreational and commercial boating, including jetties, moorings, launching ramps, navigation aids and marine craft. The Department of Transport is also responsible for the survey and operation of commercial ferries and hire and drive vessels, registration and control of pleasure craft, enforcement of safety navigation, granting of mooring licences, closure of navigable waters, and limiting of boat speeds. It has the power to set aside navigable waters.

Fisheries Western Australia

Fisheries WA is responsible for the management of fishery resources. This involves optimising yields, which ideally are distributed equitably amongst user groups, consistent with the conservation of fish populations and habitats. The *Fish Resources Management Act 1994* is the predominant legislation governing Fisheries WA activities. Under the Act the Minister for Agriculture, Fisheries & Forestry and the agency are responsible for management of professional and recreational fisheries. The agency provides

inspectors which enforce regulations under the Act. It also carries out research in conjunction with other government agencies and universities, usually funded by the Fisheries Research and Development Fund.

Fisheries WA is also responsible for the approval of aquaculture activities and the translocation of exotic fish species, the latter being under a memorandum of understanding with the Department of Environmental Protection.

Water Corporation

The Water Corporation is not a Government Agency, but rather a wholly government owned business. Its business is supplying water related services to the State including public water supply, sewerage and major drainage works. The taking and supply of water is regulated by the Water and Rivers Commission. The Corporation operates under a licence from the Office of Water Regulation.

Office of Water Regulation

The Office of Water Regulation was formed under the *Water Services Coordination Act 1995*. Its purpose is to pursue the efficient and effective delivery of the water services to the community by regulating licensed providers of water services, fostering and encouraging competition in the provision of water services and promoting the development of commercial water services.

The Office of Water Regulation has authority to:

- regulate and license the provision of water services;
- coordinate and advise on water services policy; and
- perform functions under laws relating to the provision of water services.

The Office of Water Regulation manages the Western Australian Farm Water Plan. The Plan which operates in the south west agricultural area of Western Australia was developed to provide a strategy to overcome problems caused by water shortages and salinity in dryland farming districts.

Aboriginal Affairs Department

The purpose of the Aboriginal Affairs Department is to achieve social and economic equality for Aboriginal people in Western Australia through the effective administration and coordination of Aboriginal affairs across Government. In addition, they implement measures to protect and maintain Aboriginal heritage and culture by assisting with land management. There are three Acts administered under the Department including the *Aboriginal Affairs Planning Authority Act 1972, Aboriginal Communities Act 1979* and the *Aboriginal Heritage Act 1972.*

All Aboriginal sites are protected under the *Aboriginal Heritage Act 1972* including:

- any place of importance and significance where persons of Aboriginal descent have, or appear to have, left any object, natural or artificial, used for, or made or adapted for use for, any purpose connected with the traditional cultural life of the Aboriginal people, past or present;
- any sacred, ritual or ceremonial site, which is of importance and special significance to persons of Aboriginal decent;
- any place which in the opinion of the Aboriginal Cultural Material Committee, is or was associated with the Aboriginal people and which is of historical, anthropological, archaeological or ethnographical interest and should be preserved because of its importance and significance to the cultural heritage of the State; and
- any place where objects to which the Aboriginal Heritage Act applies are traditionally stored, or to which, under the provisions of the Act, such objects have been taken or removed.

Activities that are likely to impact or alter stream beds, water courses or foreshores along rivers, estuaries or wetlands should only proceed after undertaking appropriate consultation with relevant Aboriginal communities. In some cases heritage surveys may be necessary to further ascertain the site’s significance.

Local Government

Local Governments are responsible for the local planning and development control in accordance with the town planning scheme and the provision of recreation facilities, management and day-to-day maintenance of foreshore reserves under their jurisdiction. There are 144 Local Governments in Western Australia.

The provisions of the *Town Planning and Development Act 1928* confers several important responsibilities on Local Government that have a direct effect on the management of waterways. These responsibilities are to:

- prepare and initiate changes to the Town Planning Scheme which control development;
- approve and supervise residential and commercial developments; and
- provide advice to the Ministry for Planning concerning the subdivision and amalgamation of land.

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Community Organisations

These fall into seven general categories for which there is considerable overlap.

Regional Natural Resource Management (NRM) Groups

Regional NRM groups usually comprise both community and government representatives working towards the development and implementation of Natural Resource Management Plans. These provide a vision and set a timeframe for attempts to tackle environmental degradation, whilst balancing social and economic considerations in a region (see Water and Rivers Commission, River Restoration Report RR 12).

Catchment Management Groups

Catchment management groups comprise groups of community members and/or stakeholders involved in planning and decision-making in a defined catchment, usually under the umbrella of a larger Integrated Catchment Management (ICM) Program (e.g. Ellen Brook Integrated Catchment Group as part of the Swan-Avon ICM Program). The groups usually include a mixture of government and community members.

Land Conservation District Committees (LCDCs) and Local Catchment Groups

LCDCs are constituted under the *Soil and Land Conservation Act 1945* to act on behalf of Soil and Land Conservation Commissioner. Every Shire has a LCDC and there are also many local catchment groups supported by Agriculture WA. Their primary role is to encourage cooperation among land users and agencies to implement sustainable land management systems primarily to prevent land degradation.

Landcare/Rivercare/Bushcare Groups

These groups often include landholders or interested individuals that operate in a local area and may have a single issue focus.

Ribbons of Blue / Waterwatch Groups

These groups usually comprise school (both primary and secondary) and community groups who are involved in monitoring water quality and river health in general.

Environmental Interest Groups

Groups that focus on either a particular environmental issue (e.g. bird watching, naturalists clubs) or a specific local site (e.g. Yenyenning Lakes Management Group, Friends of Forrestdale Lake).

References and further reading

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