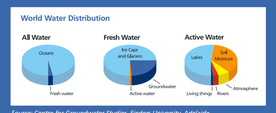
freshwater AUSTRALIA

Introduction

Freshwater is an indispensable part of all ecosystems. Aquatic ecosystems provide many of the natural ecological functions that underpin much of our social and economic well being. The condition of a river system is a direct reflection of land use activities and has a major influence on downstream environments. Safeguarding freshwater ecosystems is therefore essential to ecological processes and economic prosperity now and in the future.

Only 2.5% of the world's water is fresh, and two-thirds of that is locked up in ice caps and glaciers. Of the remaining amount, some 20% is in areas too remote for human access and a further 60% comes at the wrong time and place — in monsoons and floods — and is not captured for use by people. Only 0.08% of the total water on the planet is accessible for human consumption. Freshwater is a finite and scarce resource and in many parts of the world is coming under increasing pressure as a result of degradation of resources and growth in population. World wide, freshwater consumption rose sixfold between 1900 and 1995 – more than twice the rate of population growth. At present, approximately one-third of the world's people live in countries with moderate to high water stress, and more than five million people die every year as a result of poor water quality.



Source: Centre for Groundwater Studies, Flinders University, Adelaide

Australia is the driest inhabited continent with over 80% of its land having an average rainfall of less than 600 mm/year. Rainfall also varies considerably from year to year, between seasons and across Australia. River flows in Australia are nearly three times more variable than the world average. This large variation in climate and rainfall has resulted in a similar variation in natural environments – ranging from the arid inland areas to the tropical environments of far northern regions to the cooler temperate climates in south-eastern Australia. Australia's inland freshwater ecosystems have evolved in concert with the variable climate and provide a diverse range of habitats for many unique native freshwater plants and animals, as well as being important for the survival of many terrestrial species. They are integral to the Australian landscape and their health is inextricably linked to their catchments.

The development of water resources in regional Australia has made a significant contribution to national wealth. It has enabled the development of thriving cities and towns across inland Australia, extensive rural industry and productive mining and tourist activities. In our predominantly dry and variable climate, with comparatively low rainfall and long dry periods, settlement and economic growth have relied upon large-scale damming, diversion, pumping and drainage of surface waters; reclamation and loss of wetlands; extraction of groundwater for stock, domestic and industrial use; irrigation; and disposal of wastes to freshwater systems.

European settlement has, however, had a profound effect on many of our water resources. Far too many of Australia's waters and water-dependent ecosystems are now suffering extensive damage, with growing economic and environmental costs to the nation.

Balancing the needs of the environment and the flows required to maintain and restore healthy rivers with the water needs of humans is a major task facing Australian governments and communities.

Some of these issues are covered in more detail on this poster. For further information visit the website **www.freshwater2003.gov.au**.

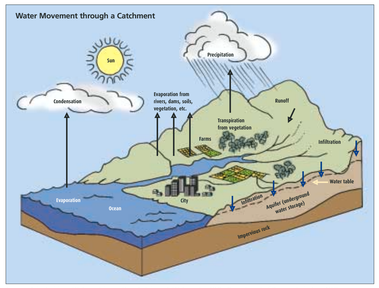
Catchments

A water catchment is an area of land bounded by ridges, hills or mountains from which surface water drains to the lowest point – a river, stream, lake, wetland or estuary.

When it rains, water feeds into streams and rivers as they run down hill. In this way water can drain into a river from an area that is many square kilometres in size.

Catchments vary in size and makeup. Large catchments are bordered by mountain ranges and include hundreds of small sub-catchments. Each sub-catchment may itself be bordered by low hills and ridges and drained by smaller creeks or gullies. What happens in all of these smaller catchments and streams will affect the water quality of the main river.

Source: Waterwatch Australia National Technical Manual, Module 1



Source: Adapted from Waterwatch and Your Catchment, Waterwatch QLD, Department of Primary Industries 1995

Water Cycle

The water cycle is the process by which water moves through the environment. Waterways receive water from surface flow or run-off; through flow; base flow; and direct input.

- Surface flow or run-off water does not soak into the ground but runs across the surface into waterways.
- Through flow is water that has been absorbed into the topsoil and then moves downhill through the unsaturated zone.
- Baseflow is water that has sunk deep into the soil and met the groundwater which seeps into a creek. It sustains the waterway long after rain has stopped falling.
- Direct input is rain falling into the waterway.

The water cycle is completed by evaporation from water bodies and evapo-transpiration from plants, and condensation.

Source: Waterwatch Australia National Technical Manual, Module 1

Rivers

Characteristics of Australian rivers vary widely with differing climates:

- In northern Australia, monsoonal rains are common during the wet season; almost 50% of Australia's average annual run-off is from the Timor Sea and Gulf of Carpentaria.
- Tropical cyclones occasionally dump heavy rain in the arid interior causing spectacular flooding.
- In south-eastern Australia, rainfall is more evenly distributed and the climate is temperate.

Australia has rivers that flow all year and others that are intermittent. They are fed by groundwater sources and surface rainfall. Intermittently flowing streams are common in semi-arid and arid Australia.

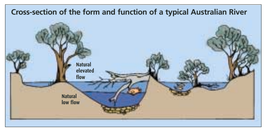
Processes occurring in catchments influence rivers. The amount and timing of run-off from a catchment will be determined by climate, topography, soil type, geology, and vegetation. Land use changes can result in an increase or decrease in flow and changes in the seasonal and daily timing of water flow. Land use activities can alter water flow by changing the rates and quantity of infiltration and overland flow as well as the extraction and release of water from dams. These changes affect the timing and volume of water that flows down a river. For example, land surfaces that are dominated by impermeable surfaces, such as roads and roofs within urban areas, can markedly change the water flow of rivers.

Sediment and nutrient inputs to rivers from catchments are also determined by many natural factors. As well, clearing for forestry and agriculture, grazing and cropping, the destruction of riparian zones, urbanisation, road construction and extractive industries can increase runoff and the amount of sediment in rivers.

Salinisation of catchments and rivers is a problem that has recently received national attention. While some Australian soils and rivers have naturally high salinity levels, the current increasing levels of river salinity are attributed to extensive clearing of deep-rooted vegetation and increasing irrigation.

Riverine habitat

The riverine habitat includes the river and its floodplain, riparian (river-bank) land, channel features and river form, flow regime and water quantity and quality.



Source: Adapted from the Australian Catchment, River and Estuary Assessment 2002, National Land and Water Resources Audit.

Floodplain water bodies include billabongs, lakes, wetlands, flood runner and distributary channels. These water bodies are naturally connected to rivers during high flows and are critical parts of the river ecosystem. Material and organisms are supplied and trapped by the floodplain as water levels rise and fall.

Floodplain water bodies can be highly productive when filled, providing a variety of freshwater habitats (e.g. distinctive habitats such as reed beds that are important for frogs, invertebrates and water birds). As water levels recede, organisms and materials such as nutrients released from organic matter are fed back to the river, replenishing resources in the stream. This exchange of materials between river and floodplain is essential for maintaining biodiversity and supporting river function. Riparian land is the land adjoining, directly influencing or influenced by a river. A major component of riparian land influencing the river is riparian vegetation. Riparian vegetation provides shade and supplies energy, nutrients and habitat to the stream and the floodplain. Degradation of riparian land is mainly caused by the removal of vegetation, but also, in some cases, by the introduction of alien species (e.g. willows).

Adapted from *Australian Catchment, River and Estuary Assessment 2002*, published by the National Land and Water Resources Audit.

Wetlands

Wetlands include swamps, marshes, billabongs, lakes, saltmarshes, mudflats, mangroves, coral reefs, fens and peatlands. They can be natural or artificial, permanent or temporary. Wetlands can have static or flowing, fresh, brackish or saline water.

Wetlands are vital to Australia. They protect our shores from wave action, reduce the impacts of floods, absorb pollutants and provide habitat for animals and plants.

Wetlands are important in other ways as well. They purify our water and are important for recreational activities. They form nurseries for fish and other freshwater and marine life and, because of this, they are critical to Australia's commercial and recreational fishing industries.

Many wetland areas throughout Australia are important to Aboriginal people. Consideration of these historical and cultural relationships is a fundamental part of wetland management.

One important aspect of wetland management is Australia's participation in the Convention on Wetlands.

Convention on Wetlands (Ramsar Convention)

The Convention on Wetlands, signed in Ramsar, Iran in 1971, is more commonly known as the Ramsar Convention. It is an intergovernmental treaty dedicated to the conservation and 'wise use' of wetlands, and was the first such treaty for the conservation of natural resources.

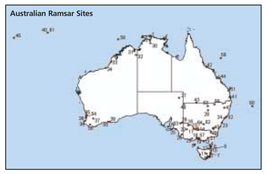
Wetlands that contain representative, rare or unique wetland types, or that are important for conserving biological diversity, can be added to the List of Wetlands of International Importance (Ramsar sites). These sites need to be managed to ensure their special ecological values are maintained or improved.

When nations sign the Ramsar Convention they agree to:

- designate at least one site that meets the Ramsar criteria for inclusion in the List of Wetlands of International Importance
- protect the ecological character of listed sites
- include wetland conservation within their national land-use planning
- establish nature reserves on wetlands and promote wetland training
- consult with other contracting parties about the implementation of the convention.

Australia was one of the first countries to become a contracting party to the convention and designated the world's first Wetland of International Importance in 1974 – Cobourg Peninsula Aboriginal Land and Wildlife Sanctuary. There are now 136 contracting parties to the convention. More than 1260 wetland sites worldwide are on the Ramsar list, covering approximately 107.5 million hectares.

Australia currently has 63 Wetlands of International Importance, which cover a total of approximately 7.3 million hectares. For further information visit www.ea.gov.au/water/wetlands.



Surface Water Drainage Divisions

Australia is divided into 12 surface water drainage divisions (or basins), which are further divided into river basins. The major drainage divisions are shown on the following map.

Source: Australian Water Resources Commission

Two drainage divisions that have received particular attention by the Commonwealth Government because of their economic significance and/or cross-border issues are the Murray–Darling Basin and the Lake Eyre Basin.

Murray–Darling Basin

The Murray–Darling Basin is one of Australia's largest drainage divisions, and is large even on a global scale. At just over one million square kilometres it comprises about 14 per cent of the Australian continental landmass. The Basin includes the Darling River, the Murray and the Murrumbidgee – the three largest rivers in Australia.

The Murray–Darling Basin is Australia's most important agricultural area, containing 72% of Australia's irrigated crop area. Irrigation industries include dairy, cotton, rice and horticulture (in particular viticulture).

The value of irrigated production from the Basin has been estimated to be $3 to $4 billion each year at the farm gate, and four times more after processing beyond the farm gate.

Tourism and recreation also make a significant contribution to the life and economy of almost all parts of the Murray–Darling Basin. The Basin contains a wide variety of tourist attractions and the natural resources of the Basin provide a basis for many recreational activities. In total, tourism in the Basin is worth over $3.4 billion each year.

The Basin is very important for its biodiversity. At the time of European settlement, about 28 per cent of Australia's mammal species, about 48 per cent of its birds and some 19 per cent of its reptiles were found there. Of these species, 20 mammals are now extinct, and 16 mammals and 35 birds are nationally endangered.

There are some 30 000 wetlands in the Murray–Darling Basin, and 12 have been listed under the Ramsar Convention. Many wetlands in the Basin are suffering because of human activities. The Macquarie Marshes in New South Wales, for example, has been reduced in extent by over 40%.

Major Government initiatives are being undertaken through the Murray Darling Basin Initiative to overcome these problems. For further information visit www.mdbc.gov.au

Lake Eyre Basin

The Lake Eyre Basin is the world's largest internal drainage system. It covers approximately 1.2 million square kilometres of arid and semi-arid central Australia.

It is considered to be one of the world's last unregulated, wild river systems. Unlike other river systems, flows in the Basin are highly variable and unpredictable.

Lake Eyre itself, at 15 metres below sea level, is Australia's lowest point. It is also the fifth largest (9690 square kilometres) terminal lake in the world although it usually contains little or no water.

All the Lake Eyre Basin's rivers and creeks flow only briefly following rain. There are many large permanent waterholes in the system that provide vital habitat for wildlife and are important to towns, communities and pastoral holdings.

The Basin is part of Australia's arid zone and the ecosystems it supports are varied and often unique. Land use within the Basin includes pastoralism, mining, tourism, oil and gas exploration and production, conservation and Aboriginal activities. The area is culturally significant and contains a wealth of Aboriginal and non-Aboriginal history.

The Lake Eyre Basin is rich in environmental, economic and cultural assets that are important for people both within and outside the Basin. The sustainable management of these assets is in the local, regional and national interest.

Biodiversity and Endangered Species

Biodiversity is the variety of all life forms – plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part.

Biodiversity is an important indication of the health of freshwater ecosystems. The level of biodiversity in freshwater ecosystems changes with disturbance – very disturbed sites have a low level of biodiversity compared to pristine or undisturbed sites. One of the best indicators of water systems' health is the response of the animals, plants and micro-organisms living in them. Water quality managers now routinely use assessments of invertebrates, fish and plants. In fact, the use of biological assessment of river health has developed to the stage where an Australia-wide assessment of river health can be achieved.

The benefits of conserving biological diversity are many. For example, freshwater ecosystems that are high in biodiversity support populations of native fish, crustaceans, amphibians and flora that are part of our heritage; they support commercial and recreational fisheries; they provide us with clean drinking water; and they provide scenic areas in which to enjoy leisure activities.

However, since European settlement of Australia, there has been a significant decline in the number and distribution of many native freshwater species. Of the 18 waterbird species listed in the Action Plan for Australian Birds, four species are listed as 'vulnerable' and five as 'near threatened', primarily as a result of habitat loss. Frog populations have been declining in Australia as in the rest of the world. Of the 208 frog species in Australia, 20 are considered endangered and seven are vulnerable. Of over 200 freshwater fish species in Australia, 11 are considered endangered and 10 vulnerable. Some of the larger freshwater crayfish species are under considerable pressure from habitat loss and overfishing.

Southern corroboree frog (*Pseudophryne corroboree*)

Conservation Status
Listed as "Endangered" under the *Commonwealth Commonwealth Environment Protection and Biodiversity Conservation Act 1999.*

Reasons for Threatened Status
The reasons for the present decline in populations of the southern corroboree frog are not yet fully known. However, the risks to this frog are increased by its restricted habitat and specialised breeding pattern.

Southern corroboree frog – Illustration by Marjorie Crosby-Fairall

While activities such as ski-resort development, road construction and the operation of a hydro-electrical scheme all have a probable impact, other complicating factors include climate change and increased ultraviolet radiation from ozone depletion. Global warming may be altering the onset and duration of the breeding season and changing the development period for eggs and tadpoles. Another threat to the southern corroboree frog, and many frogs in Australia and overseas, is emerging diseases such as the recently discovered chytrid fungus. Erosion and pollution of waterways used for breeding also contribute to population decline.

Tasmanian giant freshwater crayfish (*Astacopsis gouldi*)

Conservation Status
Listed as "Vulnerable" under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999.*

Reasons for Threatened Status
A number of factors have led to the decline of the Tasmanian giant freshwater crayfish. These include loss of riparian and instream habitat, in-stream barriers preventing dispersal (including culverts and bridge structures), extensive stream siltation from erosion, stream channel damage from sand and gravel extraction, contaminants entering the waterway and illegal fishing.

Tasmanian giant freshwater crayfish – Laurie Goldsworthy

Trout cod (*Maccullochella macquariensis*)

Conservation Status
Listed as "Endangered" under the *Commonwealth Commonwealth Environment Protection and Biodiversity Conservation Act 1999.*

Reasons for Threatened Status
Overfishing, altered flow and temperature regimes, other forms of habitat degradation, deterioration in water quality and competition with alien fish species have been implicated in the decline of trout cod.

Trout cod – Günther Schmida

Groundwater

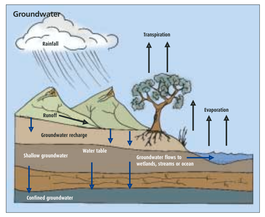
Groundwater is by far the world's largest source of freshwater. It is estimated that the amount of water stored in underground aquifers is 400 times greater than all the surface water in lakes, reservoirs, streams, and rivers.

Groundwater is part of the water cycle. When rain falls on land, some of this water evaporates, some flows to streams and rivers, and some seeps into the soil and is absorbed by plant roots. Some of this water may also percolate further underground until it reaches a region known as the water table where all the pores or openings in the soil or rock are saturated with water. Water in this saturated zone below the water table is called groundwater. Groundwater is also found in layers of porous rock called aquifers that can be relatively near the surface or kilometres underground.

Groundwater varies in quality, ranging from fresh to highly salty. Good quality groundwater is used for water supply and a range of other purposes and is usually accessed by drilling holes (known as bores) deep into the ground. Groundwater can be pumped to the surface via these bores or may rise to the surface under its own pressure. Groundwater stored in aquifers under pressure is called artesian groundwater.

In Australia, approximately 21% of water used comes from groundwater. For Western Australia and the Northern Territory, groundwater represents a significant proportion of all water used for irrigation, urban/industrial and rural purposes. Between 1983–84 and 1996–97 groundwater use in Australia increased by 88%. Many urban centres, for example Perth, rely heavily on groundwater and for around 600 smaller communities across Australia, groundwater is the principal source of drinking water. Many of the pastoral and other agricultural industries in inland Australia rely heavily on access to groundwater.

Unsustainable groundwater extraction and use in some parts of Australia has led to problems including land degradation, falling water levels and pressures, and impacts on groundwater dependent ecosystems. Governments around Australia are working to improve the management of groundwater resources to address these problems.



Source: Adapted from Water and Rivers Publication, Water Facts 11. Department of Environmental Protection, WA

Groundwater dependent ecosystems

In recent years there has been an increasing awareness of the plants and animals that live in groundwater systems or which rely, sometimes exclusively, on groundwater for survival. These biological systems are collectively referred to as groundwater dependent ecosystems. They area small, but diverse and important, component of Australia's biological diversity, and include terrestrial (land based) vegetation, river base flow systems (rivers fed by groundwater), aquifer and cave ecosystems, wetlands, terrestrial fauna and estuarine and near-shore marine ecosystems.

These animals live underground and depend on groundwater for their survival.

Halosbaena tulki, the only member of the crustacean order Thermosbaenacea known from the Southern Hemisphere.

Photo: Douglas Elford, Western Australia Museum

Milyeringa veritas (Pisces: Eleotridae), one of two blind cave fishes known in Australia, both from Cape Range.

Photo: Douglas Elford, Western Australia Museum

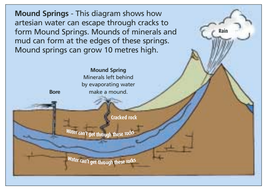
Mound springs in the Great Artesian Basin

Over millions of years, water has accumulated in aquifers deep under the earth's surface. This water is often under great pressure (artesian). This pressure forces water to the surface through cracks and other faults in the overlying rocks. Where this water reaches the ground surface, sediments and salts that are deposited by the spring water as it evaporates can form mounds, which are commonly referred to as mound springs. Mound springs occur in Queensland and South Australia in the western discharge zones of the Great Artesian Basin.

Over 40 species of small freshwater snails are known to occur only in the mound springs of the Great Artesian Basin, with some only occurring in a single spring. A significant number of these snail species are now considered to be endangered because many of the springs are located on pastoral land, where they are threatened by trampling stock or changes in spring flow due to unsustainable groundwater extraction.

In recognition of the need to conserve and protect remaining ecological values, some mound springs in the Great Artesian Basin are listed as endangered ecological communities under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.*

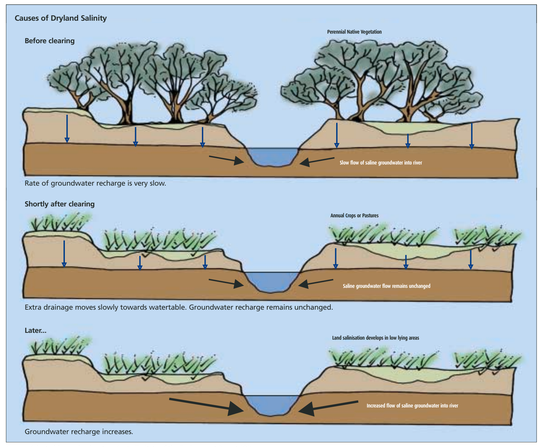
There are also cultural heritage values associated with mound springs. Many stories of Aboriginal ancestors involve mound springs and their placement along travel routes. Some of these springs feature in Aboriginal myths and hold spiritual and cultural significance for Aboriginal communities.



Source: Adapted from the South Australian Museum

Salinity

The major cause of dryland salinity is the clearing of deep-rooted, long-lived vegetation and its replacement with shallow-rooted annual crops. In areas that are cleared, water can 'leak' into saline groundwater tables, raising their levels until they reach the surface. As well as causing soil salinisation, raised saline groundwater tables may discharge saline water directly into rivers, streams and lakes.



Source: Adapted from Inland Waters, Australia State of the Environment Report 2001.

Salinity in Rivers and wetlands

The impacts on inland waters of increasing salinity are primarily caused by:

- increased inflow of rising saline groundwaters into rivers, streams, wetlands and lakes
- higher salt loads in catchment run-off from salinised land
- degradation of riparian vegetation due to increased soil and water salinisation.

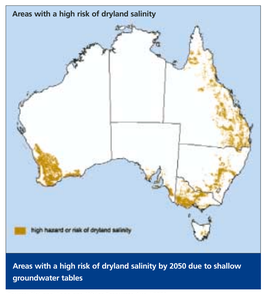
Dryland salinity can affect areas some distance downstream from the cleared areas, with severe impacts on biodiversity remnants. In Western Australia for example, many low-lying remnant vegetation communities will almost certainly become extinct due to salinity. Many wetlands are threatened by salinisation in the eastern states and Western Australia.

Areas that have been identified as having a high risk of being affected by dryland salinity by 2050 due to shallow groundwater tables are shown on the map. These are areas where the groundwater tables are within two metres of the surface or are within five metres of the surface and are rising.

Irrigation-induced salinity

Irrigation-induced salinity is caused by increased 'leakage' of water from the surface into groundwaters due to over-irrigation or the irrigation of inappropriate soils. It has similar impacts to dryland salinity but can generally be managed by improving irrigation practices (e.g. ensuring over-watering does not occur). However, in areas which are unsuitable for irrigation, more comprehensive measures such as extensive tree planting may be needed.

Adapted from Inland Waters, Australia State of the Environment Report 2001.



Areas with a high risk of dryland salinity by 2050 due to shallow groundwater tables

Source: National Land and Water Resources Audit 2001

Water and Australia's Agricultural Industries

Australia's biggest water user — agriculture — is a vital part of the national economy, a major regional employer and an integral part of our identity as Australians.

Australian experience has shown that the long-term sustainability of our water resources must be managed along with the economic viability and growing demands of agriculture, human consumption and industry. In the international context, Australian agricultural industries add to world food security, supplying high-value fresh food exports to countries and regions where demand for food is growing and stable supplies are essential.

The challenge is to manage these often competing demands for our limited water resources in ways that are fair, practical and affordable.

As a result of inefficient water use, poor returns on irrigation infrastructure and environmental pressures, the Commonwealth and State Governments agreed in 1994 to an integrated approach to water management.

Australia's cutting-edge approach to water management has much international attention, delivering important long-term benefits, including higher value production, more sustainable and profitable industries, a healthier natural environment and better quality supplies for local communities.

There is no doubt that adopting this approach represented a major challenge for some water users. On the plus side, however, it has helped us to better manage one of the most severe droughts in Australian history.

Getting more out of the water we have, including increasing water use efficiency, is vital if we are to make the most of this important resource. Finding cost-effective ways of increasing irrigation efficiency, for example, has the potential to make a huge difference to Australia's water consumption levels.

Particularly for the benefit of future generations, we need to take every opportunity to continually refine policies and initiatives that aim to increase the productive use of Australia's freshwater supplies while at the same time ensuring their future sustainability.

You can find more information on water and Australia's agricultural industries at: www.affa.gov.au

Urban Water Quality

Stormwater runoff is a major threat to the quality of waterways and estuaries in Australia's urban areas – our cities and large towns. Urban runoff can carry litter, sediment, bacteria, nutrients, oils and heavy metals into waterways. This can make urban waterways unhealthy as sources of drinking water, unsuitable for swimming, unable to support sensitive aquatic organisms and ugly to look at.

The traditional approach to urban stormwater management has been to build drainage systems that channel stormwater into local waterways, sometimes with little regard for the impact on those waterways. Whilst urban drainage design must continue to prevent flooding and to protect public health, new design approaches are being implemented to protect the water quality of urban waterways.

Over the last 20 years environment protection agencies, water resource managers, and urban planning authorities have developed new approaches to urban water quality, called Water Sensitive Urban Design. The main points of this design are that:

- stormwater management should be incorporated into new urban area design processes
- on-site stormwater management should address catchment-wide objectives (e.g. protecting the water quality of receiving waterways)
- stormwater management should incorporate features of the natural stormwater system as much as possible (e.g. existing wetlands and streams)
- stormwater management should use locally indigenous vegetation where possible.

The Natural Heritage Trust's Coastal Catchments Initiative is helping state and local governments to adopt Water Sensitive Urban Design by funding the development of Model Planning Provisions for Water Sensitive Urban Design, to be included in town planning schemes, and helping authorities to interpret and implement these provisions for their particular situation. Further information on the Coastal Catchments Initiative is available at www.ea.gov.au/coasts/pollution/cci/index

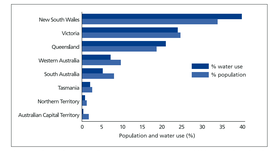
Water use statistics

Australian households are the highest users of mains water after agriculture (about 16 per cent), with the toilet and shower alone using 40 per cent of that amount. The Government is developing a national labeling water efficiency system for products like taps and shower heads, so that consumers can make informed purchasing decisions.

Total water use in Australia

- Between 1985 and 1996–97, total annual water use in Australia increased by 65% to 24 058 GL/year. Surface water accounts for 79% of total water use while groundwater accounts for 21% of total water use.
- Over the past 20 years, the area of irrigated land has almost doubled in New South Wales and Queensland, and there was a 76% increase in the annual volume of water used for irrigation between 1985 and 1996–97.
- Drinking and industrial water use increased by 55% between 1985 and 1996–97.

Change in mean annual water use in Australia



Source: Adapted from Australian Water Resources Assessment 2000, National Land and Water Resources Audit, Land and Water Australia, 2001.

Proportion of Australia's total mean annual water

Source: Adapted from Australian Water Resources Assessment 2000, National Land and Water Resources Audit, Land and Water Australia, 2001.

Pressures on surface water resources

- Between 1985 and 1996–97 the volume of water extracted from surface waters for human use increased by 59% to 19 100 GL/year. Of this water, 83% was used for irrigation and agricultural purposes, while the remaining 17% was used for drinking water supply and by industry.
- The highest water use is in the Murray–Darling drainage division, particularly for irrigation in the Goulburn–Loddon, Murrumbidgee and mid-Murray catchments. Water extraction is also relatively high from the river systems providing drinking water for major cities on Australia's east coast. Water use in the Murray–Darling drainage division is not expected to increase significantly, as allocations are capped at the 1993–94 levels of water resource development.
- Future increases in water use are likely to occur in the relatively undeveloped northern regions such as the Timor Sea.

Statistics from Australian Water Resources Assessment 2000, National Land and Water Resources Audit, Land and Water Australia, 2001.

What is being done?

The Commonwealth, State, Local Governments, community groups and industry bodies are all working towards the protection and sustainable use of Australia's freshwater resources. The Commonwealth Government has implemented the National Water Reform and in partnership with the States and Territories is implementing the National Action Plan for Salinity and Water Quality and funding for environmental activities through the Natural Heritage Trust.

In 2003-04 nearly $364 million is being invested in natural resource management through the National Action Plan for Salinity and Water Quality and the Natural Heritage Trust.

National Water Reform

In February 1994, the Council of Australian Governments (COAG) consisting of the Prime Minister, Premiers, Chief Ministers and the President of the Australian Local Government Association agreed to implement a "strategic framework to achieve an efficient and sustainable water industry." The Framework aims to promote the action that is needed to halt the widespread degradation of our natural resources and to minimise unsustainable use of our precious water resources.

The Framework includes provisions for water entitlements and trading, environmental requirements, public consultation and education, water pricing and research.

National Action Plan for Salinity and Water Quality

National, State and Territory governments have committed $1.4billion over seven years from 2001/02 to implement the National Action Plan for Salinity and Water Quality. The idea is for all levels of government to work together with local and regional communities in developing and applying solutions. The National Action Plan focuses on regional plans, developed by the local community. Governments will invest in regional outcomes rather than individual projects. The National Action Plan is designed to improve land and water management in 21 priority regions.

Further information on the National Action Plan for Salinity and Water Quality is available at www.napswq.gov.au

Natural Heritage Trust

The $2.7 billion Natural Heritage Trust is jointly funded with the States and Territories and was set up in 1997 to help to restore and conserve Australia's environment and natural resources. In the 2001 Federal Budget, the Government announced an additional $1 billion for the Trust, extending the funding for five more years and ensuring the future of many important ongoing activities. Of this additional $1 billion the Government expects to spend at least $350 million on measures to improve Australia's water quality.

The extended Trust complements the National Action Plan by directly investing in projects to improve water quality through its four main programmes – Rivercare, Coastcare, Landcare and Bushcare.

Funding for the Natural Heritage Trust is available through the community level with Australian Government Envirofund grants up to $30,000, the regional level through the regional plans and a National/ State level. The Trust will deliver important resource outcomes including improved water quality, less erosion, improved estuarine health, improved vegetation management and improved soil condition.

Further information on the Natural Heritage Trust is available at www.nht.gov.au

For further information on the International year of Freshwater and the Government's water initiatives please visit www.wateryear2003.gov.au , www.ea.gov.au and www.affa.gov.au or telephone 1800 803 772

Natural Heritage Trust
Helping Communities Helping Australia
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