EVERYBODY NEEDS

ALC: MILE S. WALLS

We couldn't live without it.

Water is the most precious commodity on earth. Without it, life on our planet could not exist. Managing our water resources is vital for the future of South Australia - our population, our environment, our economy and our quality-of-life. We now know that some of the ways we used water in the past were inefficient and have caused damage to our waterways and surrounding catchments.

Our future depends on it.

We cannot continue these harmful practices any longer. Now we have to rehabilitate our water resources, protect and heal them, and develop new ways of managing them.

Every South Australian can and must play a part in protecting our water. It is vital for our future, and our children's future.





A Message from the Premier

66 All South Australians should be proud of the way we have begun a new era in our relationship with our waterways and water resources.

We often tell others that we are the driest State on the driest continent. But now we can also say that we are leading the nation, and sometimes the world, in finding the best ways to use, manage and conserve water.

From our catchment water management boards to our reuse of treated effluent, from our aquifer recharger to our irrigation improvements, from our 'Save the Murray' campaign to our salt inception schemes ~ we are doing everything we can to protect our water resources for future generations.

We have even managed to make the future of the River Murray a top priority for the whole nation.

We need to keep leading the way. And the information in this supplement is a very good start for everyone who wants to help.



The Jurger Construction of the Jurger State of The lifeline of Our State



We rely on the Murray

The River Murray is the largest and most important of South Australia's water resources. We rely on it to support our industry, regional communities and primary production. We even rely on it to provide drinking water for Adelaide and many regional townships. Some years, up to 90% of Adelaide's tap water is provided by the Murray.

Half Our Water

On average half of the total water South Australia uses for irrigation, domestic and industrial consumption comes from the River. It's the lifeline of our state. Without the Murray we could not enjoy the quality-of-life, environmental diversity, recreational facilities or tourism success that we do. In fact. we couldn't enjoy much at all.



4 States Working Together

The River Murray is part of the Murray Darling river system, the longest in Australia and 15th largest in the world. Extending through four States, the enormous strain on this natural resource is beginning to take its toll. Queensland, Victoria, New South Wales and South Australia are now all working together to protect the health of the River Murray.

The Fight for the Murray

South Australia has been instrumental in securing a commitment of hundreds of millions of dollars from the Commonwealth Government and the other States to help us fight to bring the Murray back to health.

For the sake of our future all South Australians need to continue to lead the way in protecting the River Murray.



world-wide importance under the Ramsar Convention: the value of

habitat of

wetlands. To protect these important wetlands the South Australian and Commonwealth Governments have purchased the property of Wyndgate, at the south-eastern end of Hindmarsh Island, at the western entrance to the Coorong National Park.

Now Wyndgate can develop further as an important conservation and rehabilitation site for the wetlands, woodlands and associated wildlife. It will enhance the conservation and management of the whole of the Murray Mouth, Lower Lakes and Coorong areas.

conservation site

salinity

In the Loxton area, one of Australia's largest irrigation improvement projects is underway. It is a joint venture between State and Commonwealth governments, Loxton irrigators and Century Orchards. The improvements, worth around \$40 million, will halve the amount of salt seeping back into the River Murray from that area.



Laying the new underground hydraulic pipelines

The new system will dramatically

reduce water lost through seepage

and evaporation that occurred with

old concrete open channels. These

are being replaced with approximately

70km of new high-pressure hydraulic

pipelines. The irrigation improvements

significant, practical projects backing

at Loxton are an example of the

A Significant Step

Continuing the Coorong

The waters of the River Murray begin their journey in the Australian Alps and more than 2.500 km later they reach the sea, entering the Coorong through the tidal Murray Mouth. This area is listed as a water bird

an international treaty recognizing

Pictured right: Aerial view of Wyndgate

\$40m Irrigation System to halve

Irrigators are by far the largest users of water from the River Murray. Without this water, many of the industries along the River would be unable to survive. But inefficient and outdated irrigation methods have led to rising salinity and these industries know that if they want to survive they have to protect the river.

Irrigation Improvement Plan



Doing their bit in Berri and **Barmera** The Berri Barmera Local Action

Planning Group started 4 years ago when 12 volunteers got together to look after their local area. Their aim was to find out how their region's natural resources had degraded and what they could do to help.



Lake Bonney blue green algae on a hot summer day. Outbreaks are usually isolated as the algae only survives in calm, hot water.

The Group raised funds through industry and Government and now around 150 people work on a range of activities from Lyrup Ferry to Overland Corner including:

• Running River Care Courses, educating over 100 irrigators on how to improve the way they use water.

 Involving irrigators in the FREE use of expensive scheduling equipment, to encourage them to adopt better practices, or purchase similar equipment.

• Lowering tracks, de-silting pipes and installing structures to increase flows onto local wetlands to flush salt and stimulate floodplain growth.

• Securing funding to move the Barmera Effluent Ponds to stop pollutants entering Lake Bonney. For more information telephone 8582 1922.



These gates were installed by the Barmer Moorook Field and Game Association in an effort to be more responsible about their sport.

Why frogs for the WaterCare logo?

WaterCare is all about looking after the quality of our waterways. We all know frogs and tadpoles live in an aquatic environment, but less well known is that frogs are good bio-indicators of the quality of a waterway.

What's a bio-indicator?

A living creature that is able to tell you something about its environment is called a bio-indicator. For example, having lots of frogs in an area tells us that the environment is healthy.

What makes frogs a good **bio-indicator?**

-rogs are good bioindicators because they, and their eggs, are extremely vulnerable to pollution. They absorb

oxygen and water, and any toxins present, through their permeable skin into their bodies. If for some reason frogs are suddenly missing from an area, this is usually a sign the environment is being polluted.

Frog Census

Frogs are such good indicators of the health of our waterways, that every year the Environment Protection Authority conducts a Frog Census. Volunteers across the State record the sounds of frogs around their local waterways.

Scientists identify the frog species they hear on the tapes and use them to build a picture of the distribution of frogs

and therefore the quality of the water in different areas. It's up to us to protect our water, not just for frogs, but for ourselves.

For more information or to be involved in the Frog Census contact the Environment Protection Agency on 8204 2000.



From the Street to the Beach

Many people don't know that water from our gutters, called stormwater, goes almost directly into the sea.

When we wash rubbish like leaves and lawn clippings into the street and drains, they can end up in the sea and the delicate balance of nature is upset. This can contribute to Algae 'blooms' that can smother sensitive sea-grasses and damage the

breeding habitat, shelter and food source of a variety of marine creatures.

One such creature is the Leafy Seadragon, South Australia's marine emblem and a relative of the seahorse. Like the WaterCare frog, Seadragons can give us valuable information about the quality of our coastal areas. Dragon Search is a community-based program that collects Seadragon sightings for this information. Our coastal waters are another important part of our water resource system. For more information about how you can help protect

Coastal areas, contact: Dragon Search (SA): 8223 5155 permission MLSSA, photographer David Muirhee

The earliest known frog appeared during the late Jurassic period, about 190 million years ago.

Frogs can jump 20 times their own length. Kangaroo only jump about four and a half times their length.

> When a frog swallows a meal his eyeballs close and go down into his head where they apply pressure and push his meal down his throat.

> > Frogs don't drink or breathe with their mouth. They absorb water and air through their skin.



Government

of South Australia



EVAPORATION occurs when the sun heats water, causing the water molecules to become so active that some of them rise into the atmosphere as vapour.

TRANSPIRATION occurs when plants take in water through their roots and then release it into the air through

WaterCare It's in your hands



The Marine Discovery Centre: 8356 8943

Stormwater or Sewerage?

Many people do not realise, but the stormwater drainage system is completely separate from the sewerage system.

SEWERAGE is the system of sewer pipes that take waste water from the sink, toilet and shower to the sewage treatment plant before it's discharged back into the environment.

STORMWATER is water that comes off our roofs, driveways, footpaths and roads when it rains. Stormwater is captured in drains in street gutters. They empty into creeks, rivers and eventually the sea or a lake. Only clean rainwater run-off should enter this system.

POLLUTION. Stormwater is not treated, so anything carried with the stormwater such as litter, soil, garden waste, detergents, germs, oil and grease also ends up in the creek, river or sea. This results in pollution of these waterways that can kill aquatic life, create unsafe swimming conditions and make the waterways in our parks and beaches unsightly.



prevent rubbish reaching the sea.

KEEPING OUR WATERWAYS HEALTHY

It's in your hands! By law, everyone is responsible for making sure that nothing but rainwater goes down our stormwater drains. The way we do things at work and at home can contribute to pollution. So let's work together

and do the simple little things listed on the right to protect our creeks, rivers, lakes and beaches.

What's being done?

South Australia has undertaken a number of innovative projects to reduce the impact of both stormwater and sewerage. The State Government, Catchment Boards and Councils have established wetlands to allow stormwater to settle

before flowing to the sea. It has completely remodelled the Patawalonga estuary to allow for seawater flushing thereby reducing the damage to the environment and making it suitable once more for aquatic sports.

Sewage treatment plants remove solids but not nutrients from waste water. Government schemes north and south of the city are now using the resulting nutrient-rich water for agriculture and horticulture, reducing the amount of pollution that goes into the Gulf, thereby helping industry and conserving freshwater resources.



The Water Cycle

Every living creature on Earth is dependent on water. But only humans are interfering with the way nature manages water so much that we may damage it forever. The amount we take, the way we pollute it and the way we move it - eg irrigation, can seriously damage the

It is important that we learn to use water in a way that respects the 'water cycle' and protects the health of our water resources for the future of all the living creatures

the leaves. This process can clean water by removing contaminants and pollution.

CONDENSATION is the process of changing water from a vapour to a liquid. As the evaporated water in the air cools down it turns into liquid and clouds are formed.

PRECIPITATION begins when the water that is condensing becomes too heavy to remain in the air. It usually falls to the ground as rain, but it can also be snow or hail.

INFILTRATION is the process whereby some of the precipitation that reaches the Earth's surface seeps into the ground.

RUNOFF is the water that doesn't infiltrate the soil flowing over the surface of the ground. Runoff flows towards the lowest point and eventually drains into streams, lakes and the ocean.

PaTCh WorK

Our Patch is a great programme that helps people to be actively involved in protecting, restoring and managing the quality of a 'Patch' of their water catchment area. A Patch can be large or small - from a few metres to a few

kilometres. Anyone can be involved. Our Patch teams can include local residents, neighbours, schools, service clubs and community groups, with support provided by local council and industry.

easy ways to protect our water

Don't throw cigarette butts or any litter onto the road. Anything that floats will end up in rivers or on beaches.

When building or renovating, make sure sand and other materials are kept away from stormwater drains and gutters.

Wash your car on the lawn not in the street where detergents can go down stormwater drains.

Use a broom to clean driveways and footpaths and put the dirt in the compost or your own back yard.Don't 🛛 🏹 hose it into the gutter.

3

Do not wash, sweep or deposit dog or other animal droppings into the gutter or stormwater system. Put them into a rubbish bin.

When you are gardening, use leaves and lawn clippings for compost, don't hose or sweep into the gutter.

Fix oil and radiator leaks on your car so that these substances don't wash into our waterways.

When working around the house, don't pour oils, wastewater, paint, washing up or anything down the stormwater drain or gutter.

Don't over-use garden fertilisers or chemicals and don't use them near drains or watercourses. Especially avoid using them during windy conditions or when rain is forecast.

When you are walking your dog, make sure that you carry a plastic bag or a 'pooper-scooper' to pick up your dog's droppings.



Don't wash equipment, tools or paintbrushes where the wastewater will run into stormwater drains.

Make sure swimming pools are backwashed into the sewer not the stormwater drain.

Plant native plants that use less water and don't drop as many leaves that pollute waterways.

If you own a farm, fence waterways to prevent livestock from polluting water and eroding banks and creek beds.

Get involved with community groups to share ideas about increasing water quality and reducing pollution.

Different Patches need different activities like: Monitoring water quality

- Protecting native vegetation and
- removing weeds
- Reintroducing native plants
- Clean-up and anti-litter programmes Maintaining and improving Linear Parks For more information contact your local Catchment Water Management Board. Picture: Onkaparinga Our Patch officer with Happy Valley Primary School students.

12

10

13

Every drop you save, helps save the Murray.



South Australia is the driest State on the world's driest continent and the River Murray is our lifeline. But the Murray is in serious danger. Salt build-up is slowly but surely killing the mighty river. You can make a difference by using less water and not wasting it ~ because every drop of water you use is one less drop in the Murray. Less water means less river flow and increased salt levels.

Salinity. The River Killer

Salt has always entered the River Murray because saline ground water would flow into the River from its surroundings. This was a natural occurrence, and before European settlement, nature took care of the River and its eco-systems, maintaining the right balance.

We Have Changed the River

We remove its water for irrigation, we regulate its flow through dams and weirs, the bed is dredged and the flow of its mouth is restricted. We have cleared vast areas of Riverside land and introduced non native plants and wildlife. It simply can't cope anymore.

River in Serious Decline

The alarming truth is that now, the health of the River Murray is in serious decline. Salinity levels have risen to the point where they are of concern to all South Australians.

Drinking Water 3 Days out of 5

Salt may be good on fish and chips, but not in our water Unless we do something to control salinity in the Murray, water quality is expected to decline over the next 20 years to the point where it will only be fit to drink on 3 days out of 5.

Short Term Damage

Salt is not removed by filtration, so saltier river water means saltier water supplies to our homes, affecting our pipes, household appliances, gardens, and clothes as well as our drinking water. It may also cause:

- Serious losses in farm production
- Rising salt damage to buildings, roads and other structures
- Damage to the natural environment

Turn Back the Clock

It is vital that we act to reverse as much as possible the damage that has already been done to the River Murray. We need to change the way we manage the River and its resources to protect its health for the future.

How do you test for salinity?

Salinty is a measurement of the concentration of salts in water. Technically, salinity is measured in Electrical Conductivity Units (ECU's). The more salt in a solution, the more it conducts 10 electricity.

Electrical Conductivity Units	
<50	Rainwater
650	Salinity level can damage irrigated crops
800	World Health Organisation standards consider this the maximum desirable limit for water quality
>1500	Can't be used for many crops Likely to cause direct damage to natural ecosystems
>5000	No longer considered to be fresh water Most freshwater animals and fish won't survive
50,000	Seawater

\$100 Million Improvement Plan

South Australia is leading the way. After winning the fight to establish a national action plan, this State has committed \$100 million over seven years as part of the plan to tackle salinity and improve water quality in the Murray-Darling River system.

The Salt Boat: **Monitoring River** Salinity

As holiday-makers in houseboats, waterskiers and keen fishermen in dinghies enjoy the Murray River, another boat quietly gets about its business. It's the 5.5 metre 'Run of River' survey boat.



Salinity readings recorded on a portable computer monitoring water flow by boat.

Testing the Water

'The Run of River' survey boat, collects samples of water every kilometre using an intake tube attached to the deepest part of the hull. The water flows to a salinitymeasuring instrument connected to a computer. These surveys provide data on the amount of salt entering the River daily.

Flushing out the Salt

ECU METER

The surveys also help to identify 'hot spots', where salt is entering the River, for further investigation and implementation of salt interception schemes

Anti-Salinity Tactics

As well as the 'Run of River' boat, the Environmental Monitoring and Evaluation Unit of the Department for Water Resources in Berri also monitors salinity using recorders mounted on pontoons that can sample the water every half hour. These are just some of the tactics used in the fight against salinity.





MURRAY



Truckloads

between them.

The Turnaround

Now. thanks to the State Government's development of salt interception schemes, this massive figure has been reduced by more than 85%. That's over 300 tonnes of salt that is no longer going into the River every day.

How it Works

A system of bores and pumps take the highly saline groundwater from underground before it can enter the River. It is piped to the 400 hectare Stockyard Plain Disposal Basin 15 km south west of Waikerie. There the saline water is disposed of by evaporation and

Ground water interception at Waikerie.

Increased pressure currently results in upward leakage of very saline water into river

Picture a convoy of dump trucks carrying salt pulling up and dropping their loads into the Murray River and you'll get an idea of how much salt enters the River every day. Historically the areas around Waikerie and Woolpunda contributed close to 350 tonnes a day

infiltration into the ground, and will not return to the River for thousands of years.

Benefits Downstream

The schemes are directly benefiting downstream users of River Murray water. Irrigators in the immediate area are seeing the benefits of the lowered level of saline groundwater under their land and the health of the River Murray flood plain vegetation is beginning to improve in some areas. Natural revegetation is also being encouraged around the basin near Waikerie and over 135 species of birds now inhabit the area.

Just the Beginning

The Waikerie scheme is currently being improved and extended downstream to enable removal of an additional 35 tonnes of salt per day. And the Government is now implementing more salt interception schemes at Qualco-Sunlands, Chowilla, Bookpurnong and Loxton to name a few.





save water wastage.



Installing a water efficient showerhead is a sure way to



Washing your car using a bucket filled with water rather



than a running hose.

Fixing leaking plumbing; a leaky tap can waste 200 litres a day.



Playing with a hose & sprinklers can be fun but it can also use 1000 litres or more per hour.

- Using a front load washing machine as they are more efficient than top loaders and waiting until you have a full load.
- Not leaving the tap running when rinsing dishes.

Ambassadors help spread the word... A number of prominent Australians have been appointed as 'Save The Murray' Ambassadors. Here is what 3 of them had to say:

The Minister for Water Resources, Mark Brindal, pictured with swimmer Tammy van Wisse, presenting the Environmental Award for Improving Community Awareness to *Mike Schultz.*

66 I believe that education is the key role in developing the transition from awareness to change. Mike Schultz, educator and leading River Murray conservationist.

66 I Have grown up with the river and realise how vital it is for country South Australia...I'm keen to do all I can to make sure all are aware of the problems so they can do their bit. 99 Mark Ricciuto, Adelaide Crows Captain.













Not leaving the tap running when brushing your teeth and shaving.



Capturing run-off from your roof in rainwater tanks to use in the house and garden.



Using a timer when watering; a forgotten sprinkler wastes about 1000 litres an hour.

Mulching leaves & lawn clippings; it can prevent up to 73% evaporation loss.



Converting your toilet to a dual flush system.



Planting local South Australiar species as they require less water.



Watering at night or in the early morning when less water is lost to evaporation.



Using a broom rather than hosing driveways and footpaths; it'll save 100's of litres.





A catchment is an area of land that collects surface and groundwater that drains to the lowest point, usually a creek, river, lake or aquifer.

From the outback to the sea, everyone lives in a catchment area. It is important that catchment water is managed in a way that protects the quality and quantity of our water and the health of waterways and eco-systems. To help to do this, Catchment Water Management Boards have been established.

Different Boards have different needs and problems to address, but they all work closely with the community to efficiently manage the water resources in their area, protect and rehabilitate their waterways and eco-systems, and find innovative and sustainable methods for use of these water resources.

Northern Adelaide and Barossa

www. catchments.net/nab phone 8285 2033

This Board covers an area nearly 2,000 square kilometers and 320,000 people. It is home to some of the most productive agricultural land, important manufacturing industries, the premium grape growing region of the Barossa Valley, and the fruit and veggie basket of the Northern Adelaide Plains. Water from this catchment area is discharged into the sea through the Barker Inlet.

Patawalonga and Torrens

www.cwmb.sa.gov.au phone 8271 9190

These Boards covers much of Adelaide, and the Adelaide Hills region. The area provides water for the city and includes the River Torrens, West Lakes/Port Adelaide River catchments and the Patawalonga Basin. Land use in the area ranges from urban to rural. Gulf St Vincent where the water from these catchments is ultimately drained is an important aquatic eco-system.

Ch Catchment Water Management Board

area are you in?



Jacobs Creek, before restoration

Onkaparinga

www.onkaparinga.net phone 8374 6000

This Board covers an area from Lobethal in the Adelaide Hills to Hallet Cove and Sellicks Beach. As well as the Onkaparinga River Catchment, this diverse area includes Field River, Christies Creek and the entire Willunga Basin. It covers 920 square kilometres of mixed urban and rural land including extensive areas of grazing lands, orchards, vegetable growing and vineyards.

Jacobs Creek, after restoration

River Murray

www.rivermurray.sa.gov.au phone 8582 4477

Dominated by the Murray, this Board's responsibilities stretch from the Victorian border to the Murray Mouth, including the most relevant areas of the Murray Darling Basin in South Australia. The area's economy is largely based on agriculture, manufacturing, and tourism - all heavily reliant on the local water resources.



A bore takes water from the Great Artesian Basin. Because the water is under pressure it will flow continually unless it is controlled.

South East

www.secatchment.com.au phone 8723 2271

The South East has some of the State's most productive land with wine grapes, forestry, and other agriculture. As well as supporting this production, its surface and extensive groundwater systems are essential for the health of many unique eco-systems including Bool Lagoon and Picanninie Ponds.

Eyre Peninsula

phone 86825655

This Board covers council areas from Ceduna to Cleve. Water is particularly precious in this region as it depends largely on groundwater and the only way that the water in the aquifer is recharged is by rainfall. This area is an important producer for the State providing nearly half our wheat, and about one third of our wool and lambs.

Arid Areas

phone 8204 9131

This Board is responsible for nearly 80% of the State! And because most of the area is arid, managing the scarce water it does have is even more important. Some of South Australia's most important water resources are found here including the Lake Eyre Basin and its rivers, and the Great Artesian Basin. These water resources are vital to outback communities and sustain some unique eco-systems.





Need to know more?

These web sites will help you to find out more about 'water care'

www.watercare.net

Watercare - links to many other sites for water organisations, and activities including Kesab Watercare Club and Watercare III student resources.

www.SavetheMurray.com

Links to dozens of other sites about the River Murray plus news, chat room, and resource material.

www.dwr.sa.gov.au

Department for Water Resources site including legislation, policies and publications.

www.sa.waterwatch.org.au

Waterwatch SA - how to improve water quality and involve the community.

www.ministers.sa.gov.au

This South Australian Government site includes a full collection of speeches and press releases on water issues.

www.mdbc.gov.au

Murray Darling Basin Commission's extensive site includes their many initiatives throughout the Basin.

www.irrigation.org.au

Irrigation Association of Australia site includes a directory of irrigation products and services.

www.awa.asn.au

Australian Water Association promotes responsible management of water and its related resources. Includes a product and services directory.

www.mlrcp.sa.gov.au

Mt Lofty Ranges Catchment Program. Onground Mt Lofty action and funded projects can be found at this site.

www.murrayusers.sa.gov.au

River Murray Urban Users provides information about the Murray River, resources and fact sheets, news, events and schools programs.

www.catchments.net

Links to individual catchment water management board sites with information on your area, how you can help, fact sheets and more.







Acknowledgement: South Australian Tourism Commission for photography (www.southaustralia.com)