



Oxygenation

A pilot plant will pump oxygen into water in the Canning River over the next few months to test if the technique is successful in reducing algal blooms. The pilot-scale experiment follows a successful trial over the 1997-98 summer that showed the method improved water quality over a significant stretch of river. Initial testing and fine-tuning took place in November. The plant was fully operational in December.

Principal Environmental Officer, Malcolm Robb, said many residents would be aware that the Canning River often has major water quality problems over summer.

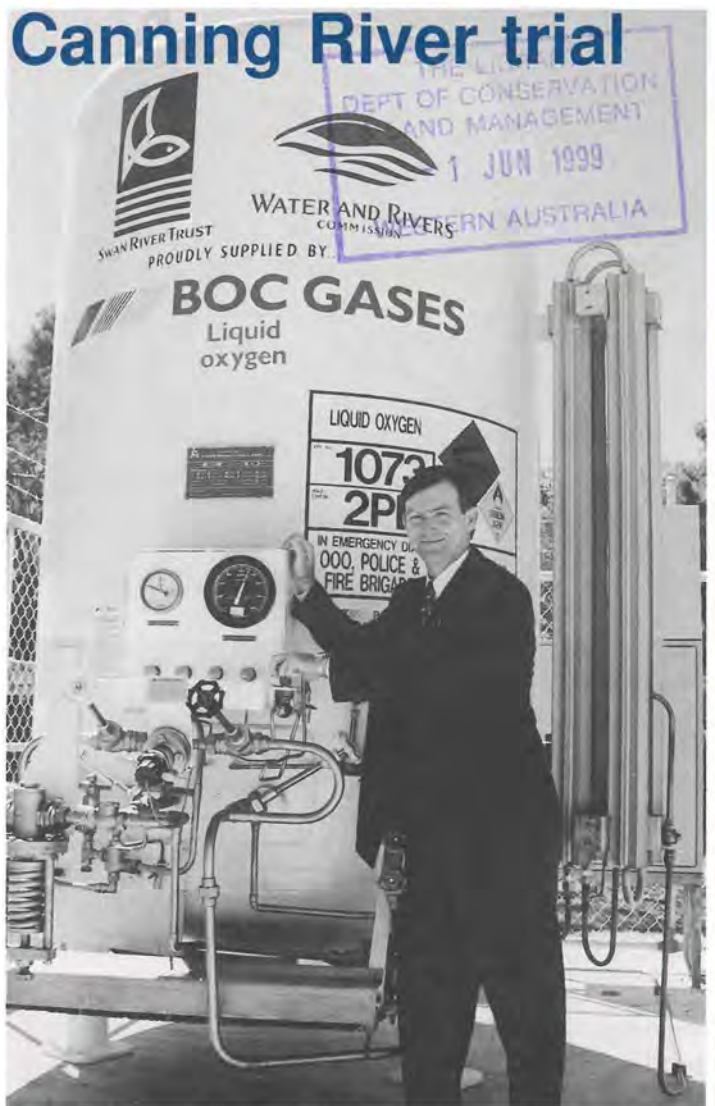
"Algal blooms are a particular problem for the Canning River over summer, and this technique is one method of reducing the levels of nutrients in the water that lead to these blooms," Mr Robb said.

"The oxygenation technique involves pumping water out of the river, mixing it with dissolved oxygen and then injecting it back into the river."

The aim is to build a plant that can improve the water quality in at least one kilometre of river and to assess the cost and benefits associated with using oxygenation to clean up the Canning River.

This specific application of oxygenation is unique in Australia, but similar plants are in regular operation overseas in lakes, reservoirs, rivers and estuaries, and the technology is similar to that used locally in the mining industry and in wastewater treatment. Recent interest has arisen in the eastern states in the use of oxygenation for improving water quality in water supply reservoirs.

BOC Gases Australia Ltd are again sponsoring the oxygenation project on the Canning River and have redesigned the pipe network and gas dissolver based on knowledge gained from last year's trial.



Water Resources Minister Dr Kim Hames launched the trial, conducted by the Swan River Trust and the Water and Rivers Commission, on 8 December 1998.

Cleanup program

goes to the community

Swan River Trust staff have been working hard to involve the whole community in developing the Swan-Canning Cleanup Program Action Plan.

The Draft Action Plan to reduce algal blooms and improve water quality in the Swan and Canning rivers was launched for public comment in July. To ensure interested groups were informed about the plan and the public submission process, Trust staff conducted briefings for over 35 organisations including Ellen Brook Integrated Catchment Group, Water Corporation, Local

Government senior officers and councillors, Agriculture WA Sustainable Rural Development Division, Wetlands Society, Bayswater Integrated Catchment Group, Conservation Council, Department of Environmental Protection and the Swan Working Group.

Dr Tom Rose, manager of the Swan-Canning Cleanup Program, said it is very important to involve the whole community in the development of the Cleanup Action Plan because the Action Plan will be something that affects everyone.

Public submissions closed in October and comments received will be taken into account in developing the final Action Plan to be released early in 1999.

City rivers ... used as a rubbish dump!

Over eighty seven tonnes of rubbish were dumped in and around the Swan and Canning rivers in the past year. Swan River Trust river manager, Darryl Miller has urged Perth people to take more care of their rivers.

"There have been disturbing increases in the number of tyres, shopping trolleys, drums and discarded syringes" Mr Miller said. "I believe this trend suggests many people lack respect for the river environment."

During the 1997-98 financial year, the Trust field crew collected:

- 242 syringes (compared with 146 during the 1996-97 financial year);
- 106 tyres (compared with 68); and
- 62 shopping trolleys (compared with 28).

"Dumped rubbish on and near the river is not just a visual eyesore, it degrades the natural environment and presents a hazard to river users and to wildlife, especially birds" Mr Miller said.

"The river system is still in relatively good condition, but rubbish is an additional pressure that could be easily eliminated. Summer is the time our rivers are under most recreational pressure, and we should all take responsibility for ensuring they are kept clean."

Cleared from the rivers and foreshore (June '97 - June '98)

Rubbish	87.59*	Birds (dead)	176
Logs and timber	109.05*	Syringes	242
Weed/foreshore	612*	Animals (dead)	8
Tyres	106	White goods	4
Drums (assorted)	56	Rocks	26.25*
Display signs	9	Rubbish bins (240 litres)	18
Salvaged boats	6	Chairs	11
Shopping trolleys	62	Vehicles	2
Fish (dead)	10.97*		

* tonnes

Rubbish statistics will be reported in future editions of Riverview. Let's all see if we can get those figures down!

The Swan River Trust spends about \$180 000 each year on clearing rubbish from below the high-water mark on the Swan and Canning rivers.

People using the river and its foreshores are urged to help by taking care not to litter. Boat owners should not throw their rubbish over the side. If there are no bins available, wrap rubbish and take it home. Throw blowfish back into the river as soon as possible, and take special care with bait bones, fishing hooks, plastic, fishing line and "disposable" nappies.

Alcoa pledges \$1.25m

Alcoa of Australia recently announced that it would provide \$1.25 million over the next five years for urban landcare works to complement the Swan-Canning Cleanup Program.

The Swan Catchment Urban Landcare Program (SCULP) has been developed in conjunction with the Swan Avon Integrated Catchment Management Program and the Swan River Trust.

At the recent sponsorship launch, Water Resources Minister Dr Kim Hames said it was a remarkable example of what could be achieved in improving natural resource management when the community, industry and Government agencies worked together to achieve common goals.

The program will support community groups in the Swan catchment undertaking projects to restore, protect or manage their local waterways, wetlands and bushland.

The Swan catchment covers 2 000 square kilometres and supports much of Perth's urban population of nearly 1.4 million. It encompasses the entire coastal plain from the top of the Ellen Brook catchment near Gingin in the north to the boundary of the Peel catchment near Rockingham in the south. The catchment extends from the Darling Range to the coast and its major focus is the Swan-Canning river system.

Dr Hames said the Swan-Canning Cleanup Program relied on a strong partnership of government and community supported by local government and the corporate sector to ensure the future health of the river system.

A Spring clean for South Perth foreshore



The South Perth foreshore received a spring clean from the Swan River Trust in October. The field crew removed unsightly building rubble and concrete from shallows exposed at low tide. The crew also excavated sand from around the Coode Street jetty and renourished the Coode Street beachfront. Reeds were planted along the foreshore, adding to the *Juncus kraussii* planted in the area in 1994. Swan River Trust manager Robert Atkins said the reeds planted in 1994 had been a success.

"The reeds give a softer edge to the South Perth wall and provide a more natural environment" Mr Atkins said.

A further 1500 reeds were planted in October 1998, and their progress will be monitored by the Swan River Trust.

Clay treatment for healthy water



Mesocosms in Lake Monger, December 1997.

An innovative project involving the Swan River Trust, Water and Rivers Commission and the CSIRO Division of Land and Water is addressing one of the causes of algal blooms in our waterways. Phosphorus stored in the sediments can be released to become food for algae under certain conditions.

The 'sediment remediation' project is the culmination of two years of laboratory and field trials to identify materials that could reduce the concentration of nutrients available to algae in aquatic systems. Results suggest that derivatives of a natural clay are able to significantly reduce the amount of phosphorus in solution over a range of salinities.

A major six month trial of the modified clay began in late 1997, using two five-metre diameter enclosures called mesocosms. The trial was undertaken in Lake Monger which experiences persistent algal blooms over spring and summer. Principal Environmental Officer Malcolm Robb said that over the six months of the trial, the available phosphorus was reduced by more than 90% in the experimental mesocosm that was treated with modified clay compared to the untreated control.

"These results are exciting and show that sediment remediation will be a valuable addition to the tool box of river intervention techniques being considered to control algal blooms in the Swan and Canning Rivers" said Malcolm." Applications for national and international patents have been lodged and cover both the method of modification and application of the clay."

The next step is to commercialise and scale up manufacture of the modified clay. A recent call for expressions of interest has attracted considerable interest from Australian and international companies.

Ellen Brook Action Plan

An average of 26 tonnes of pure phosphorus pours into the Swan River from the Ellen Brook catchment each year. This amounts to a massive 36 per cent of the total load entering the river system. Excessive nutrients, especially phosphorus and nitrogen, are the main cause of algal blooms in the river.

Water Resources Minister Dr Kim Hames recently launched a plan detailing current and proposed actions in the Ellen Brook catchment as part of a major push to significantly reduce the amount of nutrients entering the river.

"The Ellen Brook catchment is the main contributor of phosphorus to the Swan River system," he said.

"The Ellen Brook has mixed land uses, but the main problem is the lack of vegetation in the catchment. This allows nutrients from all sources to move quickly into the river.

"This means everyone has to take extra care with fertiliser use and what goes into the drains.

"We are calling on the Ellen Brook catchment community to lend a hand in this battle."

The Ellen Brook Action Plan has been sent to householders in the Ellen Brook catchment. It outlines what the problems are, what is planned, and most importantly, what everyone can do to help.

Groups such as the Ellen Brook Integrated Catchment Group and the local Land Conservation District Committees from the Shires of Swan, Chittering and Gingin are already working on the ground with landholders and residents to improve the catchment.

The draft Action Plan for the Swan-Canning cleanup proposes that up to \$3.3 million be spent over five years to support existing and future projects in the catchment. Some of the actions outlined in the plan include:

- fencing continuous sections of the Ellen Brook streamline;
- building nutrient-stripping artificial wetlands;
- field days for the community to show landholders how land management practices can reduce nutrient runoff and offering incentives to encourage these practices to be adopted; and
- implementing a catchment plan throughout Ellen Brook, to be overseen by a catchment coordinator.

If you would like a copy of the Ellen Brook Action Plan, please contact Marie Andersson at the Swan River Trust on 9278 0360.

Ribbons of Blue

Ribbons of Blue is a school and community education program focussing on monitoring water quality and macroinvertebrates, understanding the results and converting this into action such as stream or wetland restoration. Each year a 'snapshot' day is held by Ribbons of Blue schools all over Western Australia to measure water quality in streams and wetlands.

The Minister for Water Resources, Dr Kim Hames, launched the Western Australian Macroinvertebrate Snapshot '98 at Lake Joondalup.



SNAPSHOT DAY – 1998

Swan Canning Industry Survey

Accidental spills or discharges of chemicals, including nutrients, pesticides, hydrocarbons and solvents, to stormwater or groundwater are of grave concern. The pesticide spill at Belmont Park Racecourse and oil spill from East Fremantle Yacht club in late 1997 heightened awareness of the environmental risks.

The Swan River Trust and Water and Rivers Commission, in conjunction with eight local government authorities in the Swan-Canning catchment, have completed site inspections and a survey of over 560 light industrial premises. On-site inspections were carried out in May-June 1997 and March-April 1998. The support of small businesses and industry organisations including the Nursery Industry Association and Master Cleaners Guild has been most encouraging.

The results show that storage of chemicals, discharge of wastewater and emergency management practices could be improved on many premises. Most small businesses are keen to protect the environment but may not have access to information about best practices. They currently recycle and reuse a variety of wastes that will help meet requirements to reduce landfill. Waste minimisation, improved treatment of wastewater and cleaner production methods are an important part of reducing pollution. Treating and reducing waste at source will help stop pollutants ending up in our stormwater, groundwater and rivers.



Gosnells environmental health officer Mark Bishop testing the water quality of a stormwater drain in Gosnells. Photographer Stephen White.

A report to be released in early 1999 will summarise the results of the survey and put forward recommendations for better environmental management practices. The survey will be continued by local and state government to assist small businesses and light industry to prevent pollution. Development of a database will allow easier reporting and a simplified pollution risk assessment. Risk assessment will help managers to determine the activities best targeted to help prevent pollution.

Hot off the press

Some of the latest publications available from the Swan River Trust:

A guide to our services, Swan River Trust 1998

Growing local plants to protect water resources. Information for Perth gardeners. Water Advice No. 6, Water and Rivers Commission, 1998

Is a garden bore the right choice for you? Information for Perth gardeners. Water Advice No. 7, Water and Rivers Commission, 1998

Watertalk - Wetlands, Water and Rivers Commission, September 1998 (Student project sheet)

Algal blooms Water Facts No.6, Water and Rivers Commission, 1998

Manual for managing urban stormwater quality in Western Australia, Water and Rivers Commission, August 1998

This new manual is designed to assist planners, engineers and others to meet requirements for managing nutrients and other pollutants in stormwater throughout Perth and other WA urban areas.



Video release

Algal Blooms and Nutrients

The latest in the series of educational videos explores the problem of algal blooms in the Swan-Canning River system and the role of nutrients from the catchment. The eleven minute video also introduces management options which are the basis for the Swan-Canning Cleanup Program Action Plan. Order forms are available from the Water and Rivers Commission, ☎ (08) 9278 0300.



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Protecting the Swan-Canning River system for the future