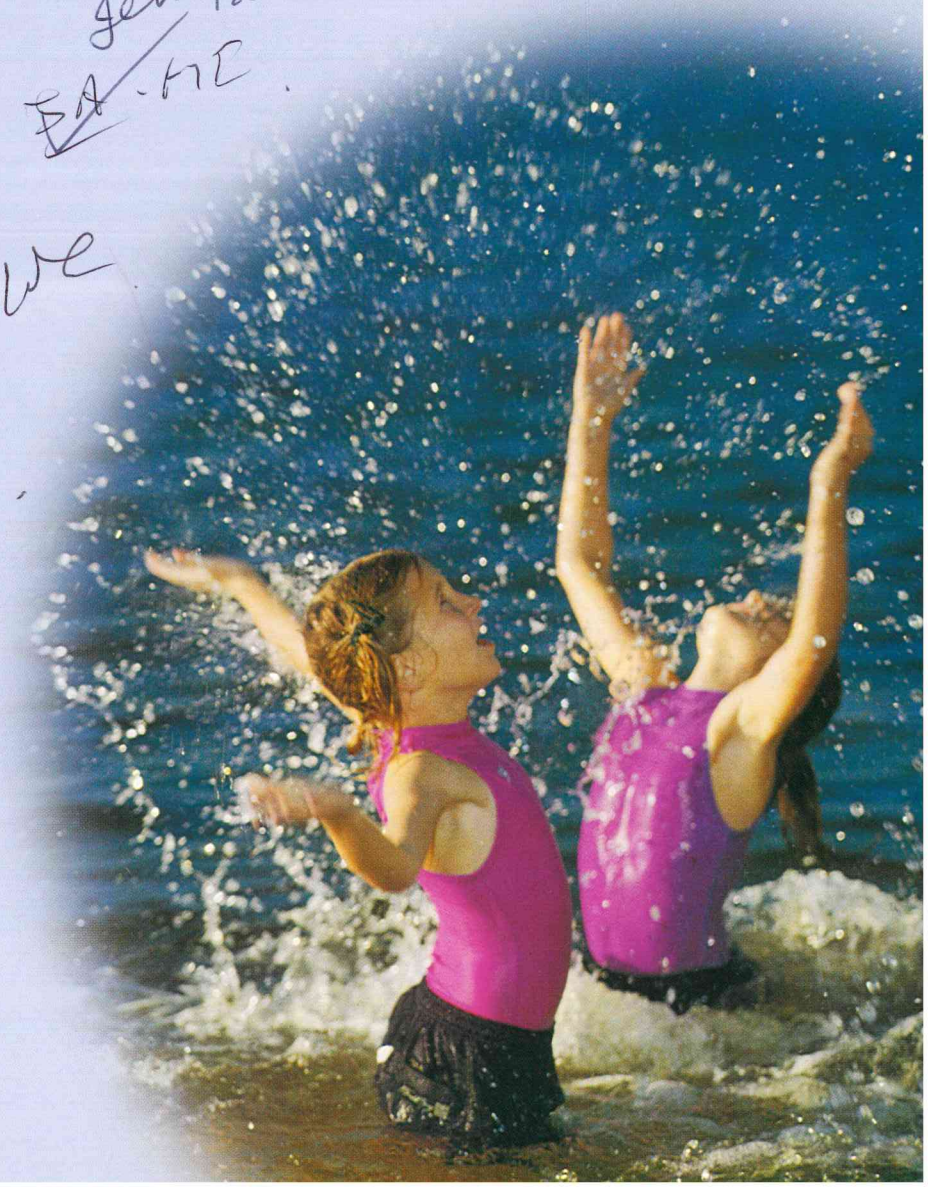
Contributing to health of the Swan and Canning Rivers

Implementing the Action Plan

June 2000

Swan-Canning Cleanup Program

Action Plan Implementation: Year 1 in Review Summary



Eco Action
Our environment, our future.

SWAN RIVER TRUST

The Swan-Canning Cleanup Program

The Swan-Canning Cleanup Program (SCCP - pronounced 'scoop') was launched by the Western Australian State Government in May 1994 as a five-year program to study the increasing incidence of algal blooms in the Swan and Canning rivers, find out how to reverse any deterioration that had occurred and develop a program for the effective management of the Swan-Canning river system.

The Program brought together expertise from government agencies, scientific organisations, local government and the community to develop an Action Plan to reduce algal blooms in the river system.

The Action Plan was endorsed by the State Government in April 1999 when it approved $17.5 million funding for a five-year implementation program that began in July 1999.

State of the river 1999-2000

The widespread toxic blue-green bloom in the Swan River in early February 2000 served as a warning of the urgent need to reduce nutrient inputs if we are to maintain the Swan as the recreational heart of Perth. This *Microcystis* bloom prompted public health warnings and effectively closed the river to recreation for 12 days.

The Swan River is normally too salty and too rough to allow this type of algae to survive. However, the combination of fresh water from unseasonal heavy rains, warm temperatures, high nutrient levels and calm weather created ideal conditions for it to grow and persist.

The blue-green bloom followed a non-toxic algal bloom in the middle reaches of the Swan River in November 1999. A bloom of *Chlamydomonas* has become a regular event on the Swan River during spring. It causes a green colouring on the water surface that is most noticeable in the afternoon. Other green algae have also bloomed at a number of sites in the Swan during and since the toxic bloom. Since March 2000, other algae (dinoflagellates and diatoms) have dominated.

The Canning River also suffered over the summer of 1999-2000 with an algal bloom of the alga *Carteria* and a potentially toxic blue-green bloom in the Kent Street Weir area.

While algae are a natural part of the Swan and Canning river ecosystems, the seasonal recurrence of extensive blooms is an indicator that nutrient levels in the rivers are too high.

The toxic blue-green bloom of February 2000 underlined just how important it is to reduce nutrient inputs to the river to avoid loss of recreational use and threats to public health and ecosystem health.

Action Plan implementation: Year 1

The 10 major recommendations of the Action Plan (consisting of 44 sub-recommendations) have been summarised into a four-point Action Plan.

Four-point Action Plan

1. **Support Integrated Catchment Management to reduce nutrient inputs**
2. **Improve planning and land use management to reduce nutrient inputs**
3. **Modify river conditions to reduce algal blooms**
4. **Monitor river health, fill critical gaps in knowledge and report progress to the community**

In 1999-2000 the Cleanup Program involved 22 major projects with almost 50 people from five government agencies working full time or part time on these projects.

1. Support Integrated Catchment Management to reduce nutrient inputs

Coordination

A Senior Officers Group (SOG) has been established since July 1998 to oversee implementation of the SCCP Action Plan. The SOG, which represents the principal agencies involved in river and catchment management, also acted as the review group for the development of Riverplan (Swan-Canning Environmental Protection Policy Comprehensive Management Plan). Riverplan was delivered by the Environmental Protection Authority to the Minister for the Environment on 1 December 1999 and will be released for public comment later this year. It provides the framework for helping to protect, enhance and restore the beneficial uses of the Swan-Avon catchment. The Riverplan is intended to improve coordination between responsible agencies to ensure that management of all projects, policies and programs is consistent with the objective of protecting the ecological integrity of the river system.

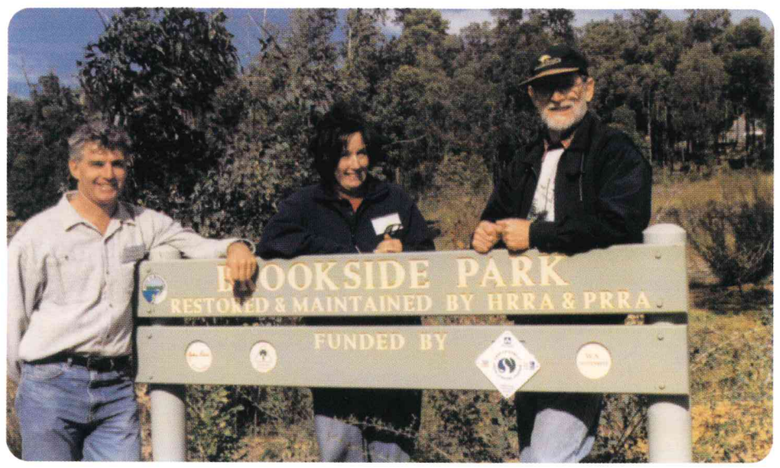
Support for catchment groups

Efforts to strengthen and support Integrated Catchment Management resulted in a total of $195 000 being allocated to catchment groups in priority catchments for administrative/executive, operational and coordinator salary support. These catchments have been identified as contributing the highest levels of nutrients to the river system.

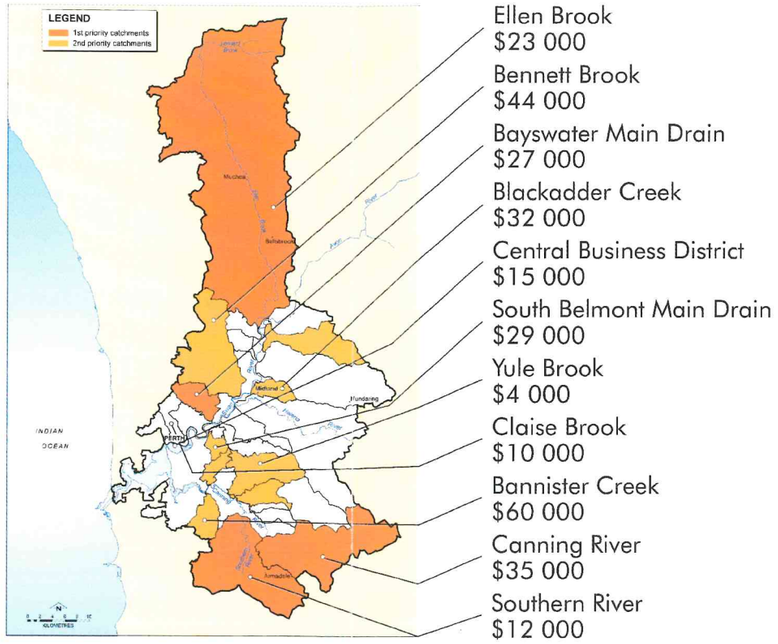
A further $100 000 was provided for on-ground foreshore restoration and rehabilitation by catchment groups and local governments through the Swan-Canning Urban Landcare Program (SCULP). The SCULP also attracted $250 000 funding from Alcoa.

Projects funded by SCCP through SCCP direct and SCULP funding are shown on Map 1.

A SCCP Catchment Management Officer has been appointed to coordinate administrative and financial support to catchment groups, provide support to stakeholders in catchment management, monitor and report on catchment management projects and represent the SCCP on nominated committees and catchment management groups.



Brian Doy - Aloca, Jenny Johnson - Jane Brook Catchment Group and Robert Atkins - Swan River Trust inspecting SCULP funded revegetation at Brookside Park, Parkerville



Map 1: SCCP support for catchment groups and SCULP by sub-catchment 1999/2000

Local government Natural Resource Management (NRM) policy

A local government NRM policy development project between the SCCP and the Eastern Metropolitan Regional Council (EMRC) is aimed at improving the environmental performance of land use activities in the Swan-Canning system. The focus of the project has been initially on policy and strategy development.

SCCP has given a commitment to fund the project for a five-year period (approximately $500 000 in total), with supplementary funding to be sought from participating local governments based on benefits they received from the project.

Farm management plans

The Swan River Trust (SRT) signed an agreement and provided $80 000 to Agriculture Western Australia (AGWEST) for a five-year SCCP project to develop and implementation farm management plans that ensure sustainable farm practices while reducing nutrient loss from farm activities. The project will provide rural land managers with up-to-date knowledge, expertise and the ability to develop farm and property plans that will address issues at the paddock level.

The project, which began in November 1999 and will continue for five years, is working with local landcare coordinators to provide workshops and other learning events for groups throughout the catchment.

Swan Catchment Centre

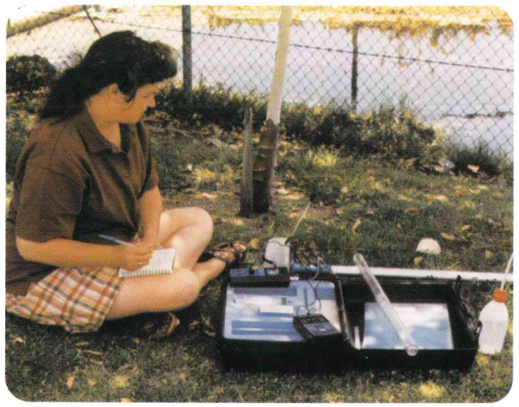
The SCCP Action Plan recognised that additional resources were needed by the Swan Catchment Centre to respond to increased community needs for support for catchment management and volunteer activities. As a result, the Centre this year received $115 000 funding from SCCP. One direct consequence was the employment in May 2000 of a Community Development Officer whose foremost task will be to establish new catchment groups in the priority catchments of the Swan-Canning system.

During the year, temporary staff were also employed to collate information for a database of community projects and contacts, collate and distribute community information packs, and help organise a range of community training events on everything from habitat enhancement to project management, bookkeeping and the Goods and Services Tax.

These activities have helped to make information, training, technical advice and support available to the catchment groups and committed community volunteers who are working at the catchment and sub-catchment level. Their work is improving local environments as well as reducing nutrient inputs to the river system.

Ribbons of Blue/Waterwatch WA

Ribbons of Blue is the Waterwatch program in Western Australia. Celebrating 10 years of community waterway monitoring and environmental education in 1999, the success of Ribbons of Blue reflects the growing concern for water quality by the West Australian people, and their support for a community driven approach to management and rehabilitation. This year has seen an increase in support by the SCCP providing $120 000 for additional Ribbons of Blue coordinators in the Swan Region, and funding additional training and workshops to help groups with monitoring projects. Catchment groups have been encouraged to link with local schools to collect water quality data which fulfils mutual objectives. This initiative has had a good uptake and has allowed an Integrated Catchment Management approach to water pollution at a local level.



Sue Lawson of the Belmont - Victoria Park Catchment Group tests water quality at Centenary Park

Artificial wetlands

Work began this year on a project to design a large artificial wetland to help strip nutrients from a stream connected to Ellen Brook. The Ellen Brook catchment contributes an estimated 36% of the total phosphorus load and 10% of the total nitrogen load to the Swan-Canning system.

An additional benefit of this project is that the constructed wetland will provide a design that is applicable to other shallow groundwater sites common throughout the Swan Coastal Plain. It can be used as a means of stripping nutrients from stormwater runoff and is likely to become a feature of Water Sensitive Urban Design in future development on the Swan Coastal Plain.

The project is jointly funded by the SCCP and the Commonwealth Coasts and Clean Seas Initiative, which provides Commonwealth NHT funding for the conservation, sustainable use and repair of Australia's coastal and marine environment.

Drain retrofitting

Work started this year on several initiatives aimed at reducing nutrient export from the Mills Street Main Drain. The drain contributes high levels of nitrogen and phosphorus to the Swan-Canning system, and the SCCP Action Plan recommended modifying the drain to reduce these inputs.

The project is jointly funded by the SCCP and the Commonwealth Coasts and Clean Seas Initiative. Negotiations have also begun with the Water Corporation for its involvement in the project. The Water Corporation is planning extensive modifications to the drain infrastructure, and it is hoped that retrofitting to improve water quality could be carried out at the same time.

A poorly managed industrial stormwater drain enters a compensating basin in the Mills Street Main Drain network

Community awareness

A community awareness campaign to encourage changes in behaviour and involvement in rivercare and catchment management began in March 2000 with the screening of a television documentary "Spirit of the Swan". The documentary was a joint initiative of Channel 7 and the Swan River Trust. Following the documentary, a series of community service announcements went to air on Channel 7 to raise awareness of individual action in the home, garden and recreational behaviour. A free-call 1800 number for people wanting further information provides prerecorded tips to 'do the right thing by the river' or connects you with the Swan Catchment Centre for further information. Research on community attitudes and information needs was carried out to help develop the awareness campaign.

DO THE RIGHT THING BY THE RIVER

Find out how you can do the right thing by the river – phone 1800 062 549 or check the advice on our web site www.wrc.wa.gov.au/srt

Plans were developed for a SCCP initiative, the Swan River Action Program, which included production of a comprehensive resource kit and discussion group guide. This resource will enable community groups to undertake learning-to-action programs designed to suit their particular interests and needs. The program will be launched later in 2000.

Contributing to health of the Swan and Canning Rivers

A project of the Swan-Canning Cleanup Program

This new badge appears on all publications, signage and other materials produced as part of the Swan-Canning Cleanup Program.

2. Improve planning and land use management to reduce nutrient inputs

Planning and policy

The first steps were taken this year in an important project to examine the feasibility of using statutory mechanisms including regulations, by-laws, town planning schemes and statements of planning policy to modify land use practices and prevent or relocate polluting activities. Funding was provided to the Ministry for Planning (MfP), as the lead agency, to investigate opportunities for using statutory tools to meet the goals of the Swan-Canning Cleanup Program. This project will be scaled up next year.

Swan-Canning Industry Survey

The Swan-Canning Industry Survey Draft Report was launched on 2 December 1999. This project is aimed at reducing pollution of the river system by training industry and local government personnel to implement best practices in managing production processes and waste disposal.

The draft report recommends a two-year strategy which includes ongoing surveys, the development of self-management tools, training, and raising awareness to help reduce future pollution risks.

The development of a training program for local government Environmental Health Officers and industry personnel began in May 2000. Fifteen Environmental Health Officers and 15 small business/light industry personnel participated in the pilot training program on "cleaner production" processes to reduce pollution.

The Swan River Trust was awarded $50 000 under the Coasts and Clean Seas Initiative to help develop the training program.

Drain licensing

Drains have long been recognised as conduits for nutrient transport to the river system, and the possibility of helping to control water quality in drains through a licensing scheme was raised in the SCCP Action Plan.

$20 000 funding was provided to the Department of Environmental Protection (DEP) to investigate the feasibility and likely impact of this proposal. While there are significant difficulties associated with licensing, there are also likely to be some very useful outputs resulting from a detailed investigation of the proposal.

3. Modify river conditions to reduce algal blooms

Oxygenation

Following successful oxygenation trials on the Canning River in 1998 and 1999, work began this year on a major project to oxygenate two kilometres of the Canning River, stretching from Kent Street Weir to Greenfield Street footbridge.

The oxygenated water is pumped into the Canning River from two land-based facilities – a previously existing oxygen plant at Bacon Street and a new plant which was built at Camsell Way.

Pumping from the Bacon Street plant began in October 1999, with the second plant at Camsell Way coming on stream in February 2000. Monitoring results to date show the oxygenation plants have been successfully raising dissolved oxygen levels in the treatment area. Oxygenation of river water aims to improve water quality and reduce the release of nutrients from the sediments to feed algal blooms.

The mobile oxygenation barge adjacent to Ron Courtney Island

Another exciting initiative in 1999-2000 was the development and trial of a mobile oxygen plant to inject oxygen into parts of the Swan River suffering poor water quality.

The barge has similar equipment to the static oxygenation plants operating in the Canning River, but can move to problem areas as required. It is a much more experimental project than the Canning River facility, designed to test the practical application of oxygenation in the larger and more complex environment of the Swan River. It was the first time this process had been used on a mobile basis in Australia. Both the Canning and Swan River oxygenation projects are partially funded by the Coasts and Clean Seas Initiative.

Sediment remediation

1999-2000 marked a significant step forward in plans to use the modified clay treatment PhosLock™ - jointly developed by the Water and Rivers Commission, Swan River Trust and CSIRO - to reduce phosphorus levels in parts of the Swan-Canning system. The modified clay binds phosphorus in the sediment so that it is not available for algal blooms. After four years of development and field trials, a large-scale application of PhosLock™ commenced in January 2000 with excellent results. This leading-edge research has generated national and international interest, reflected by media coverage nationally and in America.

The use of this technique to prevent algal blooms will depend on the ability to reduce supplies of phosphorus transported into the river by surface flows, including drains. In the coming year, devices to introduce PhosLock™ into drains will be developed in addition to its continued application to the Canning River.

The Canning Southern and Wungong Rivers Management Plan

A draft Canning Southern and Wungong Rivers Management Plan was developed during the year, with a series of recommendations for improving water quality. The aim is to reduce the frequency of algal blooms and improve the ecological health of the Canning River. The Management Plan will be released for public comment later this year.

4. Monitor river health, fill critical gaps in knowledge and report progress to community

Monitor river health

Progress and compliance reporting for the SCCP including all data collection, validation, laboratory management, algae identification, data analysis and reporting for the catchment and estuary has begun and is on track.

Water quality targets

Along with the refinement of water quality targets for freshwater tributaries, targets are being developed for estuarine waters. Both these sets of targets will be used in conjunction with our existing water quality monitoring scheme and will provide us with an accurate mechanism to report changes in water quality. The targets are based on key environmental indicators such as total nitrogen (TN), total phosphorus (TP), chlorophyll-a concentration, and dissolved oxygen level.

Sediment nutrient cycling

The SCCP Action Plan identified a lack of knowledge about the movement of nitrogen and phosphorus in river sediment as a key information gap needing to be addressed. In response, work began this year to measure actual rates of nitrification and denitrification from the sediments of the Swan and Canning rivers.

The information gained from this project will help provide information on the cost/benefit of reducing sediment nutrient sources and developing effective remediation methods.

Decision support models

A major project to evaluate a range of catchment and estuarine computer models and assess their suitability as tools for a river management decision support system began this year by the employment of a catchment modeller. Computer modelling can help define issues and assess the effectiveness of possible solutions.

An ecological computer model developed by the Centre for Water Research at the University of Western Australia with substantial SCCP funding was delivered mid 1999, and an ecological modeller was employed at that time. The next year will be spent calibrating and validating the model for the Swan River.

Reporting to the community

Reporting to the community on year one of the Action Plan included media releases and briefings, a community forum in June, and publication of four issues of the RiverView newsletter. This document, a summary of the year's major achievements, was also released in June.

Action Plan implementation: *the year ahead*

As the first year of implementation of the Action Plan draws to a close we look back on a great start to the program and look forward to the opportunities and challenges of the year ahead. The second year will see the continued delivery of successful initiatives, the commencement of new and delayed projects and the completion of others. New initiatives and highlights of the Four-point Action Plan for 2000-2001 include the following:

1. Support Integrated Catchment Management

• Support for ICM will be extended with over $500 000 available for catchment groups and foreshore restoration works. • Community support services will be greatly enhanced by the appointment of a catchment management officer, a community group development officer and a community education officer. • In partnership with the EMRC the SCCP will fund an exciting new project aimed at improving local government environmental management through policy development. • Retrofitting of the Mills Street Main Drain will demonstrate how nutrient inputs can be reduced through simple, cost-effective works. • Community education and behavioural change will be targeted in a major cross-media public awareness campaign.

2. Improve planning and land use management

• A major project aimed at incorporating nutrient reduction principles in the planning framework will be commenced by the MfP. • Results of the Swan-Canning Industry Survey will be used to target Best Management Practices training for industry practitioners. • The DEP will produce a report on the feasibility of drain licensing for discussion.

3. Modify river conditions to reduce blooms

• Completion of the sediment remediation trial will provide detailed information on the effectiveness of this technique. • Similarly the performance of the Swan River oxygenation barge will be assessed. • Oxygenation of the Canning River will continue as a key tool in maintaining acceptable water quality. • A newly developed management plan for the Canning River will commence its first year of implementation.

4. Monitor river health and report progress

• Water quality targets and a compliance monitoring system will be proposed for broad adoption. • Work will continue on the development of a decision support system to improve environmental management decision making.

For more information see back cover for contact details. Your feedback is important to us.

3rd floor, Hyatt Centre
87 Adelaide Terrace
East Perth Western Australia 6004

Telephone: (08) 9278 0400
Facsimile: (08) 9278 0401

Email: srt@wrc.wa.gov.au
Website: www.wrc.wa.gov.au/srt

ISBN: 0-7309 7467-7
ISSN: 1328-3715