

1. PROJECT OVERVIEW

1.1 Introduction

The Department of Water Affairs and Forestry has commissioned the CSIR to manage a project for the design of a monitoring programme to monitor the health of aquatic ecosystems in South Africa - a "biomonitoring" programme.

The project is planned to take place over a 3 year period, and will draw on the resources and knowledge of institutions and experts throughout the country and, where necessary, abroad.

1.2 Design methodology

The approach of designing monitoring programmes as management information systems recognizes that the ultimate purpose of a monitoring programme is to produce information which is used by water resource managers to manage water systems. The generic process used to design monitoring programmes as management information systems is described in more detail in **Appendix B**.

A modular approach is being used in this project for the design and testing of the biomonitoring programme, in order to facilitate development, testing and demonstration. The design is being carried out in three phases, each consisting of several components as indicated below.

PHASE 1 - Specification of Information Expectations:

- ! Specification of the management information requirements, both from a water quality and water quantity perspective, for aquatic ecosystems management;
- ! Specification of information on aquatic ecosystems health that can be produced by a biomonitoring programme;
- ! Develop a consensus on the compromises that would need to be made in the course of matching management information requirements with the ability of a biomonitoring programme to deliver the required information.

PHASE 2 - Detailed Implementation Design:

- ! Design of the required monitoring network, i.e. monitoring sites, variables to measure and frequency of monitoring;
- ! Detailed design of data collection procedures;
- ! Detailed design of data analysis and information reporting mechanisms and procedures.

PHASE 3 - Development, Testing and Demonstration:

- ! Development of biomonitoring methodologies required by the detailed design in cases where these are not currently available;
- ! Testing of components of the design as these are defined;
- ! Piloting and demonstration of the complete biomonitoring programme on a small scale to prepare for full scale implementation.

1.3 Target group

The monitoring programme is being designed to meet the information requirements of the primary users, namely water resources managers in the Department of Water Affairs and Forestry, tasked with the duty of ensuring the sustainable use and health of South Africa's aquatic ecosystems. These managers require information for the performance of a variety of management functions such as resource use planning, operations and control, including pollution control.