

APPENDIX 2

AN EXAMPLE OF A RHP BUSINESS PLAN (DICKENS, 1998. UMGENI WATER, KWAZULU-NATAL)

River Health Programme - Business Plan

*to be used by organisations wishing to participate with the KZN River Health Programme and who would like to "Adopt a River".

Aim:

To promote river health by providing information for management.

Target of the KZN Implementation Plan: (adapted from the National Target)

By December 1998, provincial and / or local catchment authorities make water resource management decisions based also on information provided by an operational River Health Programme.

Products:

- C a structured framework for monitoring river health
- C State of the Environment Reporting
- C to identify and quantify where **impacts** are taking place
- C to assist in setting specific **objectives** for rivers (eg. based on a river classification scheme)
- C to measure and evaluate the impact of **developments** on ecosystems
- C to be able to **predict** changes in the ecosystem due to planned developments
- C access to data will enable the **management** of rivers
- C improve the **awareness** of river health.

Motivation:

The limited nature of freshwater in South Africa makes these resources critically important in terms of sustainable economic and social development. It is essential therefore, that all responsible agencies including Government authorities, local catchment managers, landowners and industrialists, should take a hand in maintaining the integrity of this resource.

The River Health programme puts into place a system that monitors *directly* the health of river ecosystems. In the River Health programme, use is made of ecological indicators, i.e. biological (eg. invertebrates, fish etc) and non-biological indices (eg. habitat characteristics) to measure and quantify changes in the river ecosystem. Information produced in this way can be fed into any programme whether at the National or Provincial scale or small areas of private land. This information then assists with making management decisions that will influence the quality of the freshwater resource.

The benefits to the Nation as a whole are obvious i.e. by providing information to assist with maintaining the integrity of the freshwater resource. The benefits to catchment managers are also obvious. Rivers flow down the length of catchments and link together all of the inhabitants. With the increasing scarcity of this resource and the increasing demands that are being made on it, it is important that all members of a catchment should have fair access to the resource and that it is not detrimentally affected by any one party.

In simple economic terms, the River Health programme has significant implications for landowners and industries. In the long-term, maintenance of the freshwater resource is essential for ongoing business. In the short-term, business practises that have few impacts on the environment are becoming increasingly important. In order to encourage these, it is now demanded of companies around the world to demonstrate their care for the environment. Accreditation via systems such as ISO 14000 is becoming necessary to conduct business abroad and

is even becoming important for local business. Numerous South African companies will already only do business with companies that are able to demonstrate a minimal impact on natural resources. The River Health Programme will provide many of the answers needed to satisfy such a system of accreditation.

Another short-term benefit for companies and catchment managers is that the River Health programme will identify problems in rivers early and help to prevent them from becoming severe. In an age when forced rehabilitation of ecosystems by polluting organisations, and the polluter pays principle, are becoming the norm, this could have a major impact on safeguarding the bottom line of businesses.

The unique advantage of this River Health programme is that all of the above is provided without a massive investment of funds. Biological monitoring is relatively inexpensive and yet is the most direct measure of ecosystem health. Results are rapidly obtained and easy to interpret thus affording managers with useful information.

Methodologies:

A number of methodologies have been recommended by the National Aquatic Ecosystem Biomonitoring Programme (NEABP report 6) but it was suggested that local implementers decide for themselves the intensity of monitoring that will be undertaken. The backbone of biomonitoring in South Africa is the invertebrate assessment technique called SASS (South African Scoring System) that was developed by Dr. Mark Chutter (1994). This technique is thus recommended, but should be coupled with the HAM (Habitat Assessment Matrix - Plafkin et al. 1989) that is used to assist with the interpretation of SASS results. Where a more complete assessment of the river, including the river bank, is required, then the RVI (Riparian Vegetation Index - under development or alternately Ripari-Man development by Kotze et al. 1997) needs to be added. These are all cost effective and rapid techniques that produce reliable results.

Other methods recommended by the National programme include indices of fish health, water quality, hydrology, geomorphology and a general Index of Habitat Integrity which assesses the entire river from source to sea. All of these have considerable merit but it is recommended that they be put aside until the basic programme is up and running. Thereafter it may be decided to add some of these methods.

Quality Control:

It is essential that some control is kept on the quality of surveys. Although there is likely to be a National guideline, in the meantime the Implementation Team will ensure that a check on quality takes place. This will involve the submission of infrequent random samples for checking by a central auditor.

Action Plan:

- C The National Programme has set a target of December 1998 by when information produced by the programme will be in use as part of decision making. They have suggested monitoring at least one important catchment in each province, but with the "Adopt a River" policy being followed in KZN, it is likely that implementation will be wider than this.
- C Those organisations that have already indicated a willingness to participate with the programme, meet to decide which rivers they will be responsible for, reference and monitoring points, submission of data and output of the programme. They should also indicate how they will use the information produced. Probable date 3 April.
- C On acceptance of this Business Plan, a public meeting will be held (date to be decided) to launch the implementation of the programme. Thereafter a road-show will be held with all / any bodies who are or who ought to be interested in the programme. Participants are encouraged to organise meetings in their area which will be supported by the implementation team. Presentations on the programme can be given.
- C Training workshops will be held in June / July 1998 in Pietermaritzburg and in Richards Bay for those who wish to learn the skills required to conduct the monitoring. If necessary a further training workshop will be held later in the year.
- C As soon as participating organisations commence biomonitoring, their results can be included in the

- provincial database.
- C Selecting the reference sites, which are used as “pristine” sites against which impacted sites are compared, is a complicated task as the location and number of reference sites will change during the implementation phase. It may take several years to complete this task. Guidance and co-ordination will come from the Implementation Team although data from participants will be incorporated in the process.

Participating bodies:

The Departments of Water Affairs and Forestry, Environmental Affairs and Tourism and the Water Research Commission are the custodians of the National Programme. In this province, a number of organisations have indicated their willingness to participate. This includes government, quasi-government, local authorities, industries, universities, environmental organisations and even private individuals and small companies. Several individuals have also contributed information for the selection of reference sites.

Responsible persons / organisations:

In a letter from the National River Health office to all provincial environmental and water authorities, an invitation was extended to nominate a person to attend a National Consultative (Sept. 1996) meeting to launch the programme. At this meeting, the KZN delegates met together and elected a single representative (the “Provincial Champion”) who in this case was Dr. C. Dickens from Umgeni Water. At a later open meeting to launch the programme in KZN a Provincial Implementation Team was selected. This includes the following who are (Umgeni Water) Jake Alletson - deputy chair (Alletson Ecologicals) Hugh Dixon-Paver - secretary (DWAF) Rob Hattingh (Richards Bay Minerals) Mike Coke (Parks Board) Brian Fowles (CSIR) Scotty Kyle (KZN Nature Conservation) Raymond Auerbach (Farmer Support Group) Victor Wepener (University of Zululand) Kerry Seppings (Durban Metro) Max Taylor and Tandi Moffet (Town and Regional Planning Commission) Mark Graham (Umgeni Water).

It is hoped that as the programme expands, more and more organisations will assume responsibility for the rivers in their area. Groups of participants could combine resources or alternately a small entrepreneur could take on the monitoring for a group of customers. Overall responsibility for the programme will reside with DWAF and DEAT but not in an executive manner.

Skills required:

Monitoring using SASS requires an alert person with a moderate training. Training is not to be found in any of the Universities or Technikons (except University of Zululand), but can be offered by various organisations that have the capability (eg. CSIR and Umgeni Water).

Minimum qualification would be a reasonable matric, but ideally would include a diploma or degree in an environmental science. Training of an inexperienced individual would take approximately six weeks including 40 hours of instruction and the balance self study. HAM would take approximately 3 hours of instruction.

Equipment required:

Little equipment is needed for biomonitoring. The following lists approximate costs:

SASS kick net	DIY for R100 or R500 to import
Waders	R200
Other SASS needs	R100
Fish electro-shocker	R5000 (only if or when fish monitoring is pursued).

Data Storage and Access:

Raw data will be stored on the Umgeni Water LIMS database and outputs generated on GIS. These will be freely available on the Umgeni Water Internet site or on request.

Budget:

The WRC and DWAF have funded the National development of the project and are currently funding the full scale implementation of the project in Mpumalanga together with further research. The budget for this is several million. Other provinces have been unsuccessful in raising government funds but in the longer term this is a possibility as is the prospect of foreign funds.

So far there have been minimal budget requirements in KZN. In the longer term it is envisaged that responsible organisations will fund their own monitoring as part of the provincial effort. In areas where there is an obvious gap it may be possible to raise the funds from government or from elsewhere. Obviously some organisations may wish to sponsor monitoring in areas outside of their own - this will be most welcome and would be useful publicity for those organisations.

In the medium term the following costs will need to be met:

	Activity	Approximate Cost	Responsibility
1.	Minor costs for workshops and road show	R3000	Participants
2.	Ground-truthing of all of the suggested reference sites. Ideally a total of up to 500 reference sites should be visited to select 200 final sites.	Variable	Carried out by all participants.
3.	Collection of initial SASS and HAM data from the 500 possible reference sites.	R120 000 total or R240 per site or part of operational costs	Many of these samples may be collected by participating organisations as part of their own programme implementation.
4.	Statistical analysis of the reference site data and elimination of those sites not suitable.	R30 000	A single agent should take on this responsibility for the whole province.

After the initial reference site selection, participating organisations would monitor sufficient monitoring sites on potentially impacted rivers to fulfill their needs (the costs are reflected in Table 1). A number of extra sites may need to be monitored to satisfy the State of the Environment investigation and report.

Use of Data:

The programme will encourage participants and catchment managers to make use of the data to make management decisions. Obviously this cannot be prescribed but it is hoped that the value of the data will naturally lead to its inclusion in management decision making.

References:

Chutter, FM (1994) The rapid biological assessment of streams and river water quality by means of the macroinvertebrate community in South Africa. In Uys MC (ed) Classification of rivers and environmental health indicators. Proceedings of a joint SA/Australian workshop. Cape Town. Water Research Commission Report No. TT 63/94.

Kotze, DC, Steytler, NS and Kirkman S (1977) RIPARI-MAN: Assessment and participatory management of riparian systems. Institute of Natural Resources, University of Natal.

Plafkin, JL; Barbour, MT; Porter, KD; Gross, SK and Hughes, RM (1989) Rapid bioassessment protocols for use in streams and rivers: benthic invertebrates and fish. US EPA Report No. EPA/440/4-89-001. Washington, DC 20460.

Approximate costs per site per annum for 1998.

Costs are based on likely costs if in-house staff are used for monitoring

Survey cost*	Costs in Rands per site per annum			
	Recommended survey#		Minimum survey~	
	Reference site	Monitoring site	Reference site	Monitoring site
SASS*	300	75	200	50
HAM*	38	38	25	25
RVI*	100	100	4.	-
Average transport cost @R1,20/km				
5 km local	18	18	12	12
10 km	36	36	24	24
50 km rural	180	180	120	120
100 km rural	360	360	240	240
Travel time*				
local trip 5 km	38	38	25	25
long trip 100 km	150	150	100	100
Cost/annum for a local site	494	268	262	112
Cost/annum for a distant site (100 km)	948	723	565	415

*Labour cost based on rate of R50/hour (technician level)

#The **Recommended** survey is base on 3 samples per annum (late summer (March, April);winter (July, August) and late spring (October, November). The difference in the SASS costs are that ALL of the biotopes (habitats) are monitored for Reference sites, but only ONE for Monitoring sites.

~The **Minimum** survey is based on 2 samples per annum (autumn and spring)