3. VISION 2005

3.1 INTRODUCTION

The previous section presented a summary of the current state of development and implementation of the River Health Programme. Before presenting a fitting future implementation strategy, it is appropriate to establish a common vision. This section aims to do this for the year 2005. It is hoped that this will provide an appropriate direction for the proposed implementation strategy.

3.2 AN INFORMATION FLOW MODEL

Monitoring is about data and information and its effective use. This section suggests a model of how information might flow from biomonitor to the ultimate users. However, to do this it is essential that the national, regional and local roles of biomonitoring are clear.

The RHP is primarily a national monitoring initiative ...

The RHP, being primarily a national programme, is more concerned with "breadth" rather than "depth" [Roux, 1998]. It is not the primary intention that cause and effect relationships are established. It is also evident from the proposed spatial and temporal scales of most of the biomonitoring indices that the emphasis is broad.

... although some indices are also suited to local use.

However, some of the indices <u>are</u> suited to local monitoring. In particular, SASS4 and associated habitat indices are appropriate to particular sites (spatial scale tens of metres), as opposed to river reaches. Therefore, should a local organisation wish to apply biomonitoring (using these indices only) for their own purposes then this is possible.

Naturally, appropriate protocols should be followed for site selection, sampling frequency, reporting formats and so on. It is not within the scope of this document to deal with these in detail at local level. However, it is within the scope to note that this is possible. In addition, if these sites can also provide useful information for national objectives, then a win-win situation is evident. Indeed, if this can be achieved, it is preferable to a situation in which a local organisation is prompted to get involved in a national programme when that organisation does not see obvious benefits for itself.

On this basis, it is deemed appropriate to include local and regional monitoring (with their own





independent objectives) in an overall model of national biomonitoring. The proviso is simply that, ideally, national objectives are also met by the local and regional programmes.

There is, nevertheless, an apparent conflict with the national objective of State of Environment (SoE) reporting. Ideally monitoring sites should be chosen randomly for this purpose. Allowing specific local organisations to include their data is not random unless in the unlikely scenario that previously randomly chosen sites just happen to fall within their jurisdiction. Nevertheless, it has been noted that a degree of pragmatism needs to be applied to the choice of monitoring sites. Given the problem of limited resources generally, it is likely to be better to include such data rather than exclude it. (Perhaps efforts should rather be spent on a statistical protocol for an optimum choice of sites for SoE reporting from the set of existing ones.)

Notwithstanding these concerns, a relatively simple generic three-tiered system is proposed. This is illustrated schematically in the adjacent figure.



Figure 3.1. Schematic hierarchical structure of biomonitoring programmes.

National refers to the whole of South Africa. A single database would exist that is routinely updated with a selected subset of data from regional databases. As at the regional level, biomonitor(s) may exist that supply information directly to the national database (not via other databases).

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Regional refers to any geographical area that is deemed an appropriate water resource management unit. For example, it may be a "water management area" (defined in the National Water Act as a management unit in the National Water Resource Strategy), a province, a catchment or combination of catchments. A region would typically be covered by a single electronic database which is being

Notes

routinely updated with a selected subset of data from a number of local areas (i.e. databases). If regional biomonitors exist (*i.e.* those whose data is inserted directly into the regional database, not via a local area database), then their original datasheets and photographs would also be stored at this level.

Local refers to a relatively small area for which a single database exists that contains biomonitoring data for that area. The database may be as simple as a spreadsheet. Original datasheets and photographs (if appropriate) would be stored at this level.



The following table suggests possible role players. Obviously, it is likely in practice that single

persons or organisations may play multiple roles.

	Possible Role Players						
Role	National	Regional					
Natural Resource Manager	Ministers, DWAF, DEAT	DWAF regional offices, DEAT provincial departments	Industrial Companies, Wate forums, Local Authorities, Irrigation Boards				
Concerned Parties	Foreign Custodians of International Agreements, WRC	Provincial MECs, Large companies in region, regional water management institutions	Company stakeholders, local water users,				
Status Reporter & Coordinator	IWQS or DEAT	DWAF regional offices, DEAT provincial departments, regional water management institutions or local Status Reporters	Company environmental officers (using company Annual Reports), academics (using scientific publications) or consultants (using client reports)				
Database Manager	IWQS	DWAF regional offices, DEAT provincial departments, academic institutions or consultants	Environmental officers, academics or consultants				
Quality Auditor	Certified specialists from DWAF or DEAT regional offices, academic or consulting institutions						
Biomonitors	Certified IWQS ecologists or consultants	Certified DWAF or DEAT regional office ecologists, academics, students (under supervision) or consultants	Certified environmental officers, academics or consultants				

Table 3.1.	Possible role	plave	ers in a	hierarchical	RHP	execution model.
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The information flow in this model is depicted in the adjacent figure. It suggests how information might flow from lowest to highest levels. These diagrams refer to data from active monitoring sites.

RHP Flow of Monitoring Information



It is evident from this model that at each level, the structure is basically the same. Each has its own objectives (and hence concerned parties), database manager and status reporter. Each can be regarded as an essentially independent unit. However, it is reiterated that the primary purpose is <u>national</u>, and hence an information flow upwards to national level must be ensured.

The **database manager** receives data in a prescribed format, stores this in the database, maintains the database and makes data available on demand. It is conceivable that because of the increased "broadness" of the requirements at national level that not all data stored on local and regional databases will be transferred upward. However, until an actual system is up and running, it is difficult to assess whether this will indeed be the case. It will also depend on the degree to which national status reporters will need to have ready access to all available data to make their final assessments.

The role of "**coordinator**" is adopted (and not "champion") because it is assumed that in the year 2005 sufficient momentum will have been established to ensure the programme essentially "runs itself". A champion is therefore not appropriate. However, continued coordination of the multitude of ongoing activities will be necessary.

It should be noted that both biomonitors and quality auditors should be certified. That is, they should have attended an appropriate training course and have been given a certificate to confirm this. This will ensure that a suitable minimum standard is maintained. It is important that appropriate quality control be exercised on all parties involved.

3.3 BIOMONITORING: A COMMODITY MARKET

A web site could be used as a South African biomonitoring expertise register and to define latest techniques.

It is envisaged that a web site will be available by this time that provides the definitive source of information on all aspects of the RHP. This should include a comprehensive inventory of certified biomonitors, quality auditors and experts on the South African RHP network. It could also contain the type of information in this document, that is, a summary of the *status quo* (updated six monthly), a clear presentation of the vision and advice on how to attain that vision. It should also contain the latest details on how to determine the various indices.

To achieve optimum cost-effectiveness, by the year 2005 there should be a number of "suppliers" of biomonitoring and an established market for biomonitoring products. (A good example of such a supplier already exists. A company called Environmental Biomonitoring Services exists that specialises in SASS4 biomonitoring.) Biomonitoring should become a "commodity". It should no longer be a competitive advantage to a company but a competitive <u>necessity</u> for effective assessment and management of water resources [Roux, 1999].

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