River Health

NATIONAL RIVER HEALTH PROGRAMME

PROCEEDINGS OF A PLANNING WORKSHOP

Held at the CSIR International Convention Centre in Pretoria on Wednesday 4 and Thursday 5 February 2004

For comment by participants within ten working days of receipt

PURPOSE OF THIS DOCUMENT

This document records the proceedings and outcomes of a planning workshop held on 4 and 5 February 2004 at the CSIR International Convention Centre in Pretoria, involving various stakeholders in the further development and implementation of the River Health Programme. The workshop was attended by 51 participants (see Appendix I for a full list of participants), including representatives from the Department of Water Affairs and Forestry's Head Office and Regional Offices, River Health Programme (RHP) Provincial Champions, RHP custodians, technical advisors and others.

The objectives of the workshop were:

- To enter into a consultative process with key stakeholders in order to obtain their input towards planning the activities of the next phase of the RHP
- To ensure that RHP activities are in line with the strategic framework for monitoring and assessment of water quality and aquatic ecosystem health that is currently being developed by DWAF in accordance with the requirements of the National Water Act of 1998
- To initiate a process whereby service providers will be given the opportunity to tender for specialised activities that will be required for the next phase of the RHP.

Reports on the current status of the various components of the RHP, on which the workshop presentations were based, were distributed to participants at the workshop. The presentations are therefore not repeated in these proceedings but are attached as appendices.

All comments, remarks, questions, suggestions and responses raised during the discussion sessions at the workshop have been captured in a Comments Report, categorised under headings related to the various workshop presentations (see section 9 of this proceedings).

Participants who attended this planning workshop should please ensure that their comments, issues of concern and suggestions contributed at the workshop are fully captured in this document. Please respond within ten working days of receipt.

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DAY 1: 4 FEBRUARY 2004

1 WELCOME, INTRODUCTION AND OBJECTIVES

The facilitator, Dr Dirk Grobler of Botsitso Business Solution, introduced himself and extended a warm welcome to participants. He briefly outlined the programme for the two days and circulated an attendance register, requesting participants to complete the register to ensure that their contact details are captured correctly. A list of participants that attended the workshop is presented as **Appendix 1** to these proceedings.

The facilitator provided a brief introduction, highlighting the key issues to be deliberated at the workshop.

1.1 Introduction

He noted that the RHP is now on the brink of a significant phase in terms of the continuation of the programme. Referring to a graph of time against adoption, he pointed out that in the beginning of a programme such as the RHP there are a number of people actively involved and working against all odds to get the RHP started and to develop technologies - these are the early adopters. Then there are the middle adopters and late adopters. Crossing the chasm from a small group of early adopters to the majority of potential adopters requires a few significant actions.

The next phase of the RHP and the expansion of the programme to beyond rivers entails crossing a chasm and therefore as such presents significant issues to be dealt with. Such issues include:

- Governance to ensure that the process is developed further and is sustainable
- The need to expand the RHP to other aquatic eco-systems and to broaden the scope of the programme so that it fits into DWAF's Monitoring Framework
- The need for a planning exercise for the next phase of the programme and to formulate a series of projects to achieve the requirements to make the RHP a broad-based, sustainable national monitoring programme
- The need to identify gaps to make the RHP a self sustainable programme by specifying the key requirements for the next phase
- There is need to ask questions like what would make the RHP products like State of Rivers reports more useful to managers so that they can be used for decision making in water resource management
- There is need to assist people to understand how to use information generated by the RHP – the survival of the programme is dependant on people using the products.

The facilitator called upon Mr Mbangi Nepfumbada, the Department of Water Affairs and Forestry's Chief Director: Water Resources Information Management, to officially open the meeting. Mr Nepfumbada welcomed all and expressed enthusiasm at the renewed energy in the River Health Programme (RHP) and the many new participants. He noted that there was good representation from DWAF Regional Offices and other key role players.

1.1 Background

In providing background to the RHP, Mr Nepfumbada explained that the programme was initiated in 1994 as the National Aquatic Ecosystems Biomonitoring Programme (NAEBP). The name later changed to the River Health Programme (RHP). The programme had come a long way since those humble beginnings a decade

ago and much has been achieved at national and provincial level. The programme is now on the brink of a new phase, the so called "National Coverage" phase.

He stated that this planning workshop provides an opportunity to ensure that the RHP's objectives for the national coverage phase are in line with both, integrated water resource management and current legislation. The RHP has been referred to as a flagship programme, which could serve as an example in deciding how to manage other programmes under the new National Water Act of 1998. The RHP forms part of the monitoring requirements in terms of the legislation.

The issues that need to be highlighted in terms of monitoring legislation with reference to the RHP are:

- Sustainable development
- The RHP and co-operative governance – this is a fundamental issue that appears in the Constitution
- The role of the RHP in resource protection, water use licensing etc.
- The linkages between the RHP and other initiatives
- Recognising the different levels of linkages and resource requirements in terms of the overall monitoring framework.

Mr Nepfumbada indicated that the RHP is currently driven by a few people's passion for the programme, pointing out that DWAF cannot continue to rely on this arrangement forever. There is need to ensure that the programme is fully capacitated towards sustainability and success. He acknowledged that the RHP has had many successes and a significant amount of good work has been achieved. It is now the opportune time to consolidate all that has been done and to move forward.

In terms of Water Resources Information Management, the Department has to coordinate most of the monitoring programmes throughout the country between the different organisations. Therefore, although the RHP has achieved some capacity, more capacity will be needed at Water Management Area level in terms of implementation requirements for the different institutions that would have to be established at different levels. The Department needs to give serious consideration to the issue of coordinating monitoring information through interaction between different organisations.

1.2 Objectives of planning workshop

Mr Nepfumbada outlined the objectives of the workshop as follows:

- To enter into a consultative process with key stakeholders in order to obtain their input towards planning the activities of the next phase of the RHP
- To ensure that RHP activities are in line with the strategic framework for monitoring and assessment of water quality and aquatic ecosystem health that is currently being developed by DWAF in accordance with the requirements of the National Water Act of 1998
- To initiate a process whereby service providers will be given the opportunity to tender for specialised activities that will be required for the next phase of the RHP.

He encouraged participants to contribute freely to the planning of the next phase of the RHP and wished them a successful workshop.

2 IMPLEMENTATION AND MAINTENANCE

This section provides an overview of the current status of those aspects of the RHP associated with the implementation and maintenance of the programme.

2.1 River surveys (data acquisition)

Dr Dirk Roux of the CSIR, Environmentek presented an introduction to the data acquisition component of the RHP. His presentation is summarised below.

2.1.1 Scope, objectives and needs

Dr Roux indicated that the RHP is a fairly mature programme, noting that 2004 is the tenth anniversary of the programme – a programme with a long history. In order to understand the full context of the RHP, one has to get involved, participate and experience the various components of the programme. One of the best ways of experiencing the RHP is to participate in river surveys, which essentially represent the RHP's data acquisition component. River surveys include aspects such as collection and identification of fish and aquatic invertebrates and the assessment of aquatic habitats. These river surveys are the actual start of the RHP implementation cycle and are linked to quality assurance, data management and reporting. This aspect of the RHP has developed over the years to an extent where several organisations participate together in river surveys. There is hardly a single organisation that has all the capabilities and resources required to conduct a comprehensive RHP survey on its own.

The RHP as it currently exists is based on the self-organising of individuals around an activity. These individuals have not been mandated to do these activities. The RHP implementation teams commonly develop around from personal friendships and networks and, from fairly homogenous teams evolve into more diverse teams representing a number of organisations in a province. This inter-provincial networks has developed further over the years to form the "RHP family". All that is required, is for someone to take the RHP seriously and to become involved in the provincial activities in order to understand and make contributions to the programme.

From the early days of self organisation and voluntary involvement, the RHP is now on the brink of the next phase and needs to consider issues of effective governance, targets in terms of what is to be achieved over the next few years, accountability of institutions, capacity needs and the systematic roll out of river surveys throughout the country.

The RHP is a significant achievement to be proud of. Every component of the programme has developed significantly despite the limited resources. All the efforts over the years have paid off to the extent that overseas (US and UK) organisations and scientists often cite RHP formats and methods as examples of best practice.

2.1.2 Current status of RHP implementation and data acquisition

Ms Tovho Ndiitwani of DWAF, Western Cape presented an overview of the current status of RHP implementation in the various provinces, highlighting the river surveys being conducted in each province. Her presentation was based on a report distributed to workshop participants and appended to these proceedings as **Appendix 2**.

2.1.3 Discussion

The comments, questions, suggestions, remarks and responses contributed during the discussion session following Ms Ndiitwani's presentation, are recorded under category 1 (RHP implementation and data acquisition in the provinces) of the Comments Report in section 9 of these proceedings.

2.2 Quality assurance

Mr Mark Graham of Umgeni Water presented an overview of the quality assurance component of the RHP, focussing on the scope, objectives, current status and needs. His presentation, based on the report distributed to workshop participants, is appended as **Appendix 3** to these proceedings.

2.2.1 Discussion

The comments, questions, suggestions, remarks and responses contributed during the discussion session following Mr Graham's presentation, are recorded under category 2 (Quality assurance) of the Comments Report in section 9 of these proceedings.

2.3 Information Technology (IT) infrastructure

The presentation on DWAF's IT infrastructure was done by Mr Herman Keuris of DWAF Water Resources Information Programmes. His presentation is appended as **Appendix 4** to these proceedings.

Mr Keuris indicated that he is impressed with the significant achievements of the RHP, pointing out that information management is an important tool in moving forward and ensuring the sustainability of the programme.

2.3.1 Discussion

The contributions made during the discussion session following Mr Keuris's presentation, are recorded under category 3 (Information technology infrastructure) of the Comments Report in section 9 of these proceedings.

2.4 Data management and storage

Mr Ulrich Looser of DWAF, Resource Quality Services presented an introduction to the data management and storage component of the RHP.

2.4.1 Scope, objectives and needs

Mr Looser highlighted the scope, objectives and needs of data management and storage for the RHP. His presentation was based on a report distributed to workshop participants and appended to these proceedings as **Appendix 5 A**.

2.4.2 Current status

Dr Helen Dallas of the Freshwater Research Unit, University of Cape Town outlined the current status of the RHP's data management and storage component. Her presentation, based on the report distributed to workshop participants is appended as **Appendix 5 B** to these proceedings.

2.4.3 Discussion

The comments, questions, suggestions, remarks and responses contributed during the discussion session following both presentations, are captured under category 4 (Data management and storage) of the Comments Report in section 9 of these proceedings.

2.5 State of Rivers reporting

Ms Mankone Ntsaba of Botsitso Business Solutions acted as facilitator for this session of the workshop. She called upon Dr Roux to outline the scope, objectives and needs of the State of Rivers reporting component of the RHP.

2.5.1 Scope, objectives and needs

Dr Roux stated that the State of Rivers (SoR) reporting component has evolved significantly since the early days of the RHP. This component represents the visible end product or outcome of the monitoring programme. SoR reporting can be used to determine whether the goals of the RHP are being achieved and in fact to audit the effectiveness of resource management policies and strategies. The return on investment can be measured in terms of stakeholder satisfaction with SoR reports.

The levels of reporting and the levels of simplicity, without losing the technical correctness, are important aspects of good State of River reporting. It is also essential that SoR reports are sensitive to the needs of water resource managers, for example if managers require integration with water quality data then then this needs to be considered.

The presentation format of SoR reports is equally important and this has changed and improved through continuous engagement of stakeholders regarding their needs. As an example, direct feedback and input from Minister Ronnie Kasrils and the Department of Environmental Affairs and Tourism (DEAT) has influenced the style and format of these reports.

The products of the SoR reporting component of the RHP has drawn much attention to the programme.

2.5.2 Current status

Ms Wilma Strydom of CSIR, Environmentek presented an overview of the current status of the RHP's, SoR reporting component. Her presentation, based on the report distributed to workshop participants is appended as **Appendix 6** to these proceedings.

2.5.3 Discussion

The comments, questions, suggestions, remarks and responses contributed during the discussion session following Ms Strydom's presentation are recorded under category 5 (State of Rivers reporting) of the Comments Report in section 9 of these proceedings.

DAY 2: 5 FEBRUARY 2004

3 SUMMARY

The facilitator, Dr Grobler provided a brief summary of the previous day's proceedings. He reiterated that the objective of this planning workshop is the initiation of the next phase in the evolution of the RHP – to plan the way ahead towards making the RHP a sustainable national monitoring programme. In doing so, a critical view on the current status of the various components of the RHP needs to be taken in order to identify gaps. This will assist DWAF to determine the funding and capacity requirements for the next phase of the RHP.

Several key issues emerged from the first day of the workshop, the most notable being the importance of integration between the various components and the various levels of the RHP. Other key issues relate to the refinement and standardisation of the RHP indices, quality assurance, management and storage of data generated by the RHP and satisfying customer requirements.

The facilitator pointed out that DWAF has undergone an intensive process of re-structuring and this needs to be taken into consideration in terms of the way forward for the RHP.

4 GOVERNANCE

The facilitator called upon Dr Roux to briefly introduce the governance component of the RHP and outline the scope, objectives and needs.

4.1 Scope, objectives and needs

Dr Roux explained that governance is a fairly new term in the context of the RHP. In a way, RHP governance started at the consultative planning meeting of the RHP in 1996 and has progressed from there onwards. It was at that consultative planning workshop between national and provincial stakeholders that the idea of having a RHP Provincial Champion was born. Having a champion to promote the interest of the RHP in the provinces has led to the success of the programme. The early personal networks have grown into informal networks through to formal collaborative arrangements in some provinces.

The roles of the various stakeholders in the evolving RHP need to be carefully considered, for example DWAF at the national level, Catchment Management Agencies at institutional level etc. Other important issues for consideration include issues of delegation of accountabilities and responsibilities, performance auditing, mandatory requirements, how different organisations work together, involvement of private sector, obtaining funding and how to integrate all of these components.

4.2 Governance in the context of the RHP

Ms Ernita van Wyk of CSIR, Environmentek outlined the importance of governance as a proposed new component of the RHP's national coverage phase. Her presentation, based on the report distributed to workshop participants is appended as **Appendix 7** to these proceedings.

4.3 Discussion

The contributions made during the discussion session following Ms van Wyk's presentation, are captured under category 6 (Governance) of the Comments Report in section 9 of these proceedings.

5 COMMUNICATION

Dr Roux introduced the communication component of the RHP, briefly outlining the scope, objectives and needs.

5.1 Scope, objectives and needs

Dr Roux stated that the communication component is an essential component of the RHP as it promotes coordination, cooperation and integration of the various aspects of the programme. Communication essentially encompasses three elements:

- How to communicate RHP results
- Coordination within the RHP family
- Marketing the RHP (media coverage etc.).

Mechanisms that have been used to promote coordination within the RHP family include technical workshops (on method refinement eg. RVI workshop, Fish Index workshop) and provincial champions meetings.

Communication with the objective of "marketing" the programme has always been under-resourced and requires more attention in the next phase of the RHP.

5.2 Current status

Ms Vassie Maharaj of Zitholele Consulting presented an overview of the current status of the communication component of the RHP. Her presentation was based on a report distributed to workshop participants and appended to these proceedings as **Appendix 8**.

5.3 Discussion

The comments, questions, suggestions, remarks and responses contributed during the discussion session following Ms Maharaj's presentation are recorded under category 7 (Communication) of the Comments Report in section 9 of these proceedings.

6 RESEARCH AND DEVELOPMENT

Dr Chris Dickens of Umgeni Water presented an overview of the research and development component of the RHP, focussing on the scope, objectives, current status and needs. His presentation, based on the report distributed to workshop participants is appended as **Appendix 9** to these proceedings.

6.1 Discussion

The comments, questions, suggestions, remarks and responses contributed during the discussion session following Dr Dickens's presentation, are recorded under category 8 (Research and development) of the Comments Report in section 9 of these proceedings.

7 INTEGRATION

Dr Roux indicated that integration within the RHP already occurs at various levels in a spontaneous manner. In retrospect, integration started when the programme brought together managers at the policy level and scientists in the early development of RHP tools. This level of integration occurred naturally without necessarily focussing on integration.

The next phase of the RHP has to focus on mechanisms to achieve integration at national, provincial and local level. The RHP must have sufficient integration between the different levels and different components to be able to function as an integrated programme. Communication is one way of achieving this integration but all other aspects need to be considered in the planning phase of the national coverage phase of the RHP.

7.1 Discussion

The comments, questions, suggestions, remarks and responses contributed during the discussion session on integration, are captured under category 9 (Integration) of the Comments Report in section 9 of these proceedings.

8 SUPPORTING HEALTH MONITORING OF OTHER AQUATIC RESOURCES

Mr Bonani Madikizela's (DWAF, Resource Quality Services) presentation focussed on the broad overall picture of water quality monitoring programmes and supporting framework, highlighting the RHP in the context of Integrated Water Resource Management and the National Monitoring Framework. His presentation is appended as **Appendix 10** to these proceedings.

8.1 Discussion

The comments, questions, suggestions, remarks and responses contributed during the discussion session are captured under category 10 (Supporting health monitoring of other aquatic resources) of the Comments Report in section 9 of these proceedings.

9 COMMENTS RAISED AT WORKSHOP

All comments, questions, suggestions and remarks raised during the discussion sessions as well as, the responses provided by the participants at the 2-day workshop have been collated and captured in the format of a Draft Comments Report, as follows.

River Health Programme (RHP)
Planning Workshop for the National Coverage Phase of the RHP

DRAFT COMMENTS REPORT

This report records the outcomes (comments, remarks, questions, suggestions) raised by participants during the discussion sessions of a planning workshop held at the CSIR International Convention Centre on 4 and 5 February 2003. The report also records the name of the contributor as well as responses from other participants.

The contributions are categorised as follows:

1. RHP implementation and data acquisition in the provinces
2. Quality Assurance
3. Information Technology Infrastructure
4. Data Management and Storage
5. State of Rivers Reporting
6. Governance
7. Communication
8. Research and Development
9. Integration
10. Supporting health monitoring of other aquatic resources
11. The way forward
12. General

COMMENTS/ QUESTIONS/ SUGGESTIONS		CONTRIBUTOR/S	RESPONSE/ REMARKS
1.	**RHP IMPLEMENTATION AND DATA ACQUISITION IN THE PROVINCES**		
1.1	Mr Charles Sekwela of the DWAF Kimberley Office has been appointed as the RHP Provincial Champion for the Northern Cape and is being trained by the Free State team to champion the RHP and participate in river surveys. Some of the rivers in the North West Province are being surveyed by the University of the Free State eg. the Harts River and others.	Mr Pierre de Villiers, Department of Tourism, Environmental and Economic Affairs	
1.2	Mr Stuart Mangold has been transferred to another division within the Department of Agriculture, Conservation and Environment (DACE), and therefore cannot continue in his role as RHP Provincial Champion.	Ms Tharina Boshoff, North West DACE	Ms Tharina Boshoff, North West Department of Agriculture, Conservation and Environment (DACE) will take over the role of RHP Provincial Champion for the North West Province.
1.3	The Forestry sector is doing a significant amount of biomonitoring in the central and southern parts of KwaZulu Natal (KZN). In addition, KZN Wildlife is covering the whole province, collecting data under different programmes but which fall under the RHP because the end goals are the same. This information is freely available to the RHP but needs to be incorporated into the Rivers Database and used in State-of-Rivers reports.	Dr Chris Dickens, Umgeni Water	
1.4	The Gouritz River, which is a major part of the Southern Cape is also being surveyed by the RHP team in the Western Cape.	Ms Toni Belcher, DWAF, Cape Town	
1.5	A large number of the rivers in the Limpopo Province have been surveyed twice already and follow-up reports have been compiled.	Mr Mick Angliss, Department of Finance and Economic Development	
1.6	The Albany Museum is involved in several river surveys in the Eastern Cape eg. Cowie River, part of the Buffalo River – this is however not part of the RHP.	Dr Ferdy de Moor, Albany Museum	
1.7	That it should be indicated why the use of the RVI index has been suspended and the Braune-Blanquet system, which is a very old system is being adopted by the KZN PIT.	Dr Ferdy de Moor, Albany Museum	RVI practitioners in the Northern Province are happy that it provides very useful data and information for the RHP for which it was developed and have the data to substantiate this. It may be a case that the RVI is used for the “wrong” purposes by some practitioners. (Dr Kleynhans, DWAF, Resource Quality Services)

COMMENTS/ QUESTIONS/ SUGGESTIONS		CONTRIBUTOR/S	RESPONSE/ REMARKS
1.8	The reason for slow progress in implementing the RHP in some provinces is because it is difficult to move over the chasm especially if all provinces are not equally and properly capacitated. The reason for the success in the Western Cape over the past 3 years can be attributed to availability of capacity (DWAF and 6 staff from Western Cape Nature Conservation) and funding.	Mr Dean Impson, Western Cape Nature Conservation	
1.9	Some provinces have had up to 300% increase in the number of people that are actively involved and capable of doing RHP assessments. The Free State and Western Cape for example have discovered ways of finding resources from other institutions and by bringing these together in the provinces, can do much more than any one organisation can achieve on its own. The Eastern Cape is high in expertise and it is perhaps only the "glue" mechanism and a bit of seed funding that is required to get the RHP running in the province.	Dr Dirk Roux, CSIR, Environmentek	
1.10	The Gauteng RHP team has fixed a four year biomonitoring cycle per catchment in the province. Catchments will be re-visited on a two-yearly basis. Provincial boundaries are an issue.	Mr Piet Muller, Gauteng DACEL	
1.11	The Coastal and Environmental Services and the Institute for Water Research would appreciate feedback on the national biomonitoring course, which they jointly offer, especially in terms of whether the format should be changed and how best it would serve the needs of the future phases of the RHP.	Dr Patsy Scherman, Coastal and Environmental Services	The purpose of the course should be re-assessed. Is its aim to provided a background for issues related to reserve determinations and monitoring or purely RHP? (Dr Kleynhans, DWAF, Resource Quality Services)
1.12	DWAF together with the contributions of several other stakeholders have made the RHP a highly successful programme. This is acknowledged and appreciated by DWAF. There are however serious issues to be addressed especially in terms of where the RHP data is currently stored as well as the positioning of the monitoring sites. These issues need to be re-visited in order to ensure that they fit into the overall picture of the national monitoring programme.	Mr Bonani Madikizela, DWAF, Resource Quality Services	It is important to consider aspects such as data acquisition points and the frequency of monitoring. (Dr Dirk Grobler, Botsitso Business Solutions)
1.13	It must be noted that the Western Cape team is not doing comprehensive surveys for all the rivers in the province. There is a growing network and the idea is to do SASS at least once a year or sometimes twice a year on some rivers. Comprehensive assessments are done for those rivers for	Mr Dean Impson, Western Cape Nature Conservation	

	COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
	which State-of-Rivers (SoR) reports are being compiled.		
1.14	That it should be indicated what the sensible frequency for conducting a comprehensive survey of a river should be.	Dr Dirk Grobler, Botsitso Business Solutions	There is a standard process for eg. SASS, every 6 weeks to 2 months, fish survey once a year. It must be noted that each index has a different frequency to be able to pick up problems/trends in the river. (Mr de Villiers, Department of Tourism, Environmental and Economic Affairs) There are two approaches, routine monitoring of a site if there is a specific activity taking place in the catchment and, monitoring for SoR reporting looking at the long-term status of the sites. (Mr Graham, Umgeni Water)
1.15	Ideally, before deciding on the frequency of monitoring for the whole country, one needs to decide on a structured approach, ie. an eco-region type of situation within each Water Management Area (WMA) and then within that to look at resource units and prioritise according to what activities are taking place in that part of the catchment. Thereafter it would become possible to work out the frequency of monitoring that particular resource unit in that river and then the overall river itself. One can get an idea of the monitoring frequency by working in the eco-regions. It is a pragmatic approach and depends on the activities in the catchment.	Dr Neels Kleynhans, DWAF, Resource Quality Services	
1.16	As a preliminary estimate there will be approximately 400 national monitoring sites throughout the country to be monitored every 3 years as a median but it must be done on a site specific basis.	Dr Neels Kleynhans, DWAF, Resource Quality Services	
1.17	There are different types of monitoring: 1) Status and trend monitoring – long-term monitoring. 2) Impact assessment monitoring eg. new factory, new landuse in catchment (shows cause and effect relationship 3) Compliance monitoring. It is assumed that the RHP is primarily a long-term monitoring system to show status and trends.	Dr Dirk Grobler, Botsitso Business Solutions	The RHP has a multiple range of uses that covers all of these areas. For example, Umgeni Water is doing routine monitoring on a monthly basis and status monitoring on an infrequent basis. The RHP can be used to do all these different types of monitoring but each will be structured differently. (Mr Graham, Umgeni Water) Conformance monitoring should be included. (Dr Kleynhans, DWAF, Resource Quality Services)
1.18	The Western Cape team tries to do comprehensive monitoring on more sites, more frequently (more than 4 times a year) in order to understand a river system better before establishing a structure for routine monitoring. Impact assessment monitoring is done on a two monthly basis for stressed catchments. It is important to do a whole suite of monitoring activities in order to understand the river system.	Ms Toni Belcher, DWAF, Cape Town	

COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
1.19 Temporal aspects ie. seasonality and how often to sample is also an important factor. Therefore, at the start of monitoring a new area, monitoring must be done more frequently, definitely on a seasonal basis. This will vary from region to region. As one becomes more familiar with the river system, then the frequency of monitoring could decrease. Monitoring less than on an annual basis is discouraged especially in the process of trying to establish reference conditions. It is also important to adopt a hierarchical approach in terms of spatial distribution where at a national level there may be a different picture. This will differ at provincial level where there will be more sites and even more sites monitored more frequently for impact assessments.	Dr Helen Dallas, Freshwater Research Unit, University of Cape Town	
1.20 The number of reference monitoring sites is a critical issue – the Western Cape would probably have about 300 sites alone.	Mr Dean Impson, Western Cape Nature Conservation	There will be approximately 400 reference monitoring sites on a national level. For provincial coverage there will have to be more intense monitoring. Compliance and impact assessment monitoring information can feed into the RHP – this type of monitoring provides more information on the cause/ effect relationship. Can do less sites but more intensively ie. hydraulics, hydrology, qualitative indices etc. (Dr Kleynhans, DWAF, Resource Quality Services)
1.21 During the early deliberations on the purpose of the RHP, there was discussions and consultation with stakeholders. It emerged then that the RHP should be a screening level programme, that should give a broad idea of what the overall ecological state of the rivers in the country is. The RHP is not intended to be a high resolution (high density of sampling sites and high frequency of sampling) programme. Linked to this as a primary objective of the RHP, is the contribution to State-of-Environment reporting. At that stage there was talk of 3 types of monitoring programmes, namely: a) national screening level; b) regional level monitoring that focuses on a specific land use or form of impact such as forestry, and c) local level monitoring where a specific impact is quantified, eg. upstream and downstream from a discharge. The RHP developed but unfortunately the other level programmes did not have the same momentum and the RHP had to pick up some of those responsibilities as well. This is how data from all sorts of sites from the forestry sector, impact	Dr Dirk Roux, CSIR, Environmentek	

	COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
	assessment sites etc. became part of the Rivers Database. The idea then emerged to assign tags to data points (on the Rivers Database) so that it is easier to identify monitoring sites and filter data required for SoR reporting.		
1.22	One should hesitate to draw a boundary that the RHP is only for status and trend reporting at national level. Status and trend reporting does have a clear objective but why not expand the RHP to for example, routine monitoring below a waste water works. The same methodology will be used so there should be a continuum and the RHP should be extended to all types of monitoring.	Dr Chris Dickens, Umgeni Water	Agree, a status report on a water resource can be produced from different levels of monitoring. On national level fewer monitoring sites are required because they will be informed from the lower levels of compliance and impact assessment monitoring. (Mr Madikizela, DWAF, Resource Quality Services) The same methodology may be used but the intensity of sampling, etc. will be substantially higher (with a cost implication) where one is dealing with a compliance or reserve issue. It would be nice to have all biomonitoring sites at same level of detail but that is unattainable due to cost involved and the available human capacity. (Dr Kleynhans, DWAF, Resource Quality Services)
1.23	The original goal of the RHP was that the programme should serve as a source of information on the status of the resource for effective river management. This goal is still valid.	Dr Chris Dickens, Umgeni Water	It was primarily for state of the rivers reporting on a national level, giving a broad perspective and certainly without a very strong cause and effect basis. (Dr Kleynhans, DWAF, Resource Quality Services)
1.24	The National Aquatic Ecosystems Biomonitoring Programme (NAEBP) was initiated in the middle 1990s. The National Water Act was only promulgated in 1998 and has certain other requirements like the ecological reserve. The thinking of the NAEBP was correct at the time of initiation but is not completely correct at present. There should be no differentiation between the different levels of monitoring but the goals and objectives of the national level of the programme must be realistic.	Dr Neels Kleynhans, DWAF, Resource Quality Services	The meaning of this is that the focus of the NAEBP as it was conceived covered a diverse number of issues. When the NWA indicated the ecological reserve requirements, it became obvious that more focus would be required for this purpose. The basic principles for a biomonitoring programme would stay the same, what would change is the focus, intensity and detail required for the purpose of different kinds of biomonitoring. (Dr Kleynhans, DWAF, Resource Quality Services)
1.25	At the design phase of the RHP, two types of sites were included, reference sites, which are un-impacted and monitoring sites where there is likely to be changes. Reference sites serve as a point of reference that one can refer back to.	Dr Ferdy de Moor, Albany Museum	The development of reference conditions became more relevant during the development of RHP methods. (Dr Kleynhans, DWAF, Resource Quality Services)
1.26	From the management and budgeting perspective it is essential to know who the accountable and responsible parties are at the national, provincial and local levels. For example who will assume responsibility for the national monitoring sites. The regional level will also have responsibilities and where they coincide with the other levels there needs to be collaboration and coordination to prevent duplication.	Dr Dirk Grobler, Botsitso Business Solutions	

COMMENTS/ QUESTIONS/ SUGGESTIONS		CONTRIBUTOR/S	RESPONSE/ REMARKS
1.27	The history of the RHP has denied having a national programme and this has forced the approach of bottom-up production of data. For example in KZN there has never been a budget for river monitoring. All the work is done by local agencies on a local basis. The collation of all these resources has made the RHP possible in KZN. Monitoring is driven at a local level.	Dr Chris Dickens, Umgeni Water	
1.28	Can provinces continue doing the RHP on a voluntary basis or should budgets be made available to them to ensure the sustainability of the RHP.	Dr Dirk Grobler, Botsitso Business Solutions	
1.29	Suggestion on how the RHP should work. People at local level can do monitoring for local interest. At regional level there are different information requirements for the same river and therefore it is critical for communication between the levels. The national level will require different information and will have to communicate those needs to the provincial and local levels. Each level requires different information that can be obtained from another level and in this way the process will be formalized. There should be some funds and a contractual agreement between the national level and provincial and local levels.	Mr Pierre de Villiers, Department of Tourism, Environmental and Economic Affairs	
1.30	The aspect of coordination of activities at national level is critical.	Mr Mbangi Nepfumbada, DWAF, Chief Directorate: Water Resources Information Management	
1.31	There should be overall coordination from the national level to ensure that the momentum is maintained in those provinces that have progressed well with RHP implementation. In provinces where there is limited or no progress, national DWAF and the Department of Environment, Affairs and Tourism (DEAT) should intervene in terms of offering assistance and resources.	Mr Dean Impson, Western Cape Nature Conservation	
1.32	A gap analysis should be done in terms of the location of the national reference monitoring sites because a province could have 100 monitoring sites, only 3 or 4 of which are of national interest.	Mr Piet Muller, Gauteng DACEL	
1.33	It is acknowledged that the monitoring work is done at local and provincial level, but that information should at some stage,	Dr Rudi Pretorius, DEAT	

	COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
	be brought up to national level as a contribution to the national State-of-Environment report. Someone at DWAF needs to assume the responsibility to ensure that this takes place.		
1.34	In terms of coordination of the RHP in the provinces, there is a definite pattern of stakeholders involved. Where there is active involvement from DWAF regional offices, they carry the national level responsibility at regional level. RHP Provincial Implementation Teams should have representation from all stakeholder levels for the RHP to function properly and be sustainable. However, the key to success is to have someone taking responsibility for each of the levels.	Dr Dirk Roux, CSIR, Environmentek	
1.35	It is important to have national coverage but it is equally important to form partnerships at local level. The establishment of Catchment Management Agencies and other such institutions will provided added capacity towards the sustainability of the RHP and add to the bigger picture.	Mr Dean Impson, Western Cape Nature Conservation	
1.36	In moving forward, there is a need to understand what the national RHP is and what needs to be put in place for eg. how many sites, frequency of monitoring etc. A Terms of Reference must be developed.	Dr Dirk Grobler, Botsitso Business Solutions	It is suggested that the RHP should start with the approximately 400 sites at national level and then establish the number of provincial monitoring sites required and frequency of monitoring before moving to the local level sites. It is also important to consider providing budget for the monitoring of provincial and local sites. (Mr Pierre de Villiers, Department of Tourism, Environmental and Economic Affairs)
1.37	Data acquisition will have to be contracted out and those parties at different levels involved in monitoring must have a contractual agreement from the national level because the exercise requires local understanding and knowledge. There needs to be a significant effort in coordination and formalization so that the RHP is less dependent on voluntary involvement.	Dr Dirk Grobler, Botsitso Business Solutions	
1.38	That it should be indicated whether the products from the national coverage PHASE would differ from products on a catchment basis. In the eco-regions approach for instance, it should be similar but there could be a loss of resolution if the product is meant for the national level.	Mr Mick Angliss, Department of Finance and Economic Development	State-of-Rivers reporting is done on provincial level but with the national objectives in mind. There are different users and different needs. The original surveys on the Crocodile and Sabie Rivers were designed around the national objectives. (Dr Roux, CSIR, Environmentek)
1.39	Most of the resources at national level must be directed towards maintaining the “glue” that holds the whole RHP structure together but it must make allowance for some sort of cascade down to local level. There needs to be direction from	Dr Chris Dickens, Umgeni Water	Agree that there needs to be direction from national level. There should be a system at national level where priority rivers are identified for example for State of Environment reporting, then budgets must be allocated to regional and local level because circumstances differ

COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
national level in this regard.		between the provinces for eg. the Eastern Cape has resource and budget pressures. If there are requirements from national level then it is important for national level to prioritise and to enter into contractual agreements and provide funding to provinces. (Dr Scherman, Coastal and Environmental Services)
1.40 It must be noted that it is unlikely that national monitoring sites will be correct if the regional sites are not correct because it becomes difficult to assign national sites for eg. if there are big rivers and small rivers as is the case in the Western Cape. It will be difficult to work on eco-regions alone. There needs to be a proper understanding of national needs.	Ms Toni Belcher, DWAF, Cape Town	
1.41 The products for national level are seen as 1) State of Environment product from the river perspective and 2) Conformance product from national government point of view, measuring conformance against objectives. In water resource management, resource quality objectives (RQO) are set. One of the key functions of DWAF is to assess to what degree are water resources managed so that they conform to the RQOs that have been set.	Dr Dirk Grobler, Botsitso Business Solutions	This relates to resource units, which relates to macro reaches. Therefore for auditing purposes, there needs to be a reference condition for each of those river reaches and this means a significant number of sites. (Dr Roux, CSIR, Environmentek) The conformance product would have a stronger cause and effect relationship than the SoR perspective due to the higher level of detail required. (Dr Kleynhans, DWAF, Resource Quality Services)
1.42 The compilation of technical reports in addition to SoR reports requires funding. There is also a need to identify key results for managers in a different format to a technical report.	Mr Dean Impson, Western Cape Nature Conservation	
2. QUALITY ASSURANCE		
2.1 That reference should be made to Black or African participants rather than non-white people as was done in the quality assurance presentation. The term “non-white” has connotations linked to apartheid.	Mr Lindela Tshwete, Resource Quality Services	
2.2 That it should be indicated whether a person that is accredited in one province, is automatically accredited to work in other provinces.	Mr Piet Muller, Gauteng DACEL	The methodologies used will be the same but the identification will differ between provinves. So it would be ideal for a person that works in different provinves to participate in a field test in the relevant province and also perhaps in the resin block proficiency testing scheme. (Mr Graham, Umgeni Water)
2.3 The Fish index (FAII) was developed originally for RHP broad based assessments and not for impact assessment	Dr Neels Kleynhans, DWAF, Resource Quality Services	It is important to understand the characteristics and variability of the Fish index to be able to interpret the results. (Mr Graham, Umgeni Water).

	COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
	type of monitoring. In order to achieve a high level of quality assurance, aspects such as the minimum number of sites per river reach, power analysis etc. have to be looked at. The index is not designed for impact assessment and compliance monitoring. If a complete statistical analysis is done one will find that there are problems with the Fish index. Therefore the results obtained from the Fish index must be interpreted within the limitations in which the method was developed. It was not intended to be included as a compliance monitoring method in licence and permit conditions although it is being used in this way in some cases. It is also important for an assessor using this index to have a fish ecology background. The Fish index requires a lot of preparation work beforehand to establish reference conditions before doing an assessment and this adds to the difficulty of the method.		The basis of the FAII is that the interpretation of the results should be based on the ecological requirements of fish (not statistical phenomena) ie. what would the absence of a particular species indicate in terms of the physical habitat, water quality and introduced biota. The FAII has been tested through repeated exercises and based on well established baseline data for rivers in Mpumalanga. (Dr Kleynhans, DWAF, Resource Quality Services)
2.4	The repeatability of a method must be tested through intensive exercises to establish the confidence level of the method.	Dr Chris Dickens, Umgeni Water	
2.5	The biggest stumbling block in passing data between the different levels lies in the standardization and reliability of the methodology for data acquisition. There needs to be a minimum level of reliability. This is a critical issue in terms of stabilizing RHP methodologies for data acquisition.	Dr Dirk Grobler, Botsitso Business Solutions	
2.6	For the Umgeni SoR report there was good fish data for some of the rivers but for other rivers, old information and expert knowledge had to be used to derive the integrity or present ecological state for the fish. This is the reality and it is therefore important to note that there needs to be better baseline data for the Fish index. Baseline studies require funds.	Dr Neels Kleynhans, DWAF, Resource Quality Services	In this case it was not even possible to use the FAII (not sufficient data obtained within a relatively well defined period of time because no basic fish survey were done for the total area). The compromise was to use indirect evidence (changes in physical habitat, water quality, aliens) in conjunction with the available fish data to derive. This (not very satisfactory) situation will repeat itself if there is not effort or budget to do a proper biological (fish) survey at selected points in other rivers for which SoR reports are required. (Dr Kleynhans, DWAF, Resource Quality Services)
2.7	There needs to be further refinement of indices to have a better understanding and confidence in the methods. However, there is also a need to be realistic in this regard.	Dr Neels Kleynhans, DWAF, Resource Quality Services; Mr Mark Graham, Umgeni Water	The Resource Quality Services (and Water Research Commission) are currently doing research to develop fish indices (or adaptations) that can be used to address specific needs. (Dr Kleynhans, DWAF, Resource Quality Services)
2.8	In terms of refinement of the Fish index – the starting point is	Dr Neels Kleynhans, DWAF,	

	COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
	to do eco-regionalization of the rivers, then establish resource units then develop a reference list for fish species in each river. The method will be already advanced even if the reference list only provides presence/ absence data.	Resource Quality Services	
2.9	There is a sense of urgency to refine the RVI methodology. A workshop should be held during this year to standardize the RVI but also to ensure that it is flexible enough to be adapted to the uniqueness of the different provinces.	Mr Dean Impson, Western Cape Nature Conservation	
2.10	It should be indicated how often an assessor or an auditor has to be tested in method proficiency and in field testing and how this can be expanded to encourage other people to participate as opposed to the same people being involved all the time.	Ms Toni Belcher, DWAF, Cape Town	
2.11	It seems that of the 5 RHP indices, only SASS would be able to stand up to scrutiny. It is therefore critical to address refinement and standardisation of the indices as soon as possible.	Dr Dirk Grobler, Botsitso Business Solutions	All indices must continuously be improved and adapted if necessary (including SASS). This begs the question as to what is meant by scrutiny. If it is scrutiny in a court, there is doubt that any of the biological indices (including SASS!) on its own would be sufficient to successfully prosecute. In combination, several of them may contribute a weight of evidence situation where prosecution may be successful. More detailed analysis of the component part of all the indices (including SASS) will be required for it to stand up to scrutiny in court. The FAII and has been published internationally and it cited in the international literature as an index that can be used in its regional context. (Dr Kleynhans, DWAF, Resource Quality Services)
2.12	At the initiation of the RHP, 10 years could have been spent on method development but it was by choice that the programme decided to launch imperfect products and this has been successful. The data that has been generated can be questioned but hopefully better data will be produced in the long-term.	Dr Chris Dickens, Umgeni Water	The data that was produced during the Mpumalanga pilot study (where many of the indices were developed) cannot be questioned (it was based on proper surveys with good historical database). In other cases where no dedicated surveys were done, the data can be questioned. (Dr Kleynhans, DWAF, Resource Quality Services)
2.13	In accordance with the new National Water Act, where should the responsibility lie for the development and refinement of the RHP indices and who should fund the process?	Dr Anneli Kuhn, DWAF, Resource Quality Services	RHP method development and refinement should be driven by DWAF finances because the RHP forms part of the Department's National Monitoring Framework. (Dr Dickens, Umgeni Water)
2.14	What is the status of the RVI?	Dr Patsy Scherman, Coastal and Environmental Services	The RVI has problems related to uncertainty and variability of results. (Mr Graham, Umgeni Water) In the last phase of the RHP there was little attention given to research

COMMENTS/ QUESTIONS/ SUGGESTIONS		CONTRIBUTOR/S	RESPONSE/ REMARKS
			because research fell into the earlier design phase of the project. The last phase of the programme focussed on institutionalisation of the RHP. Research and method development is a critical issue that needs to be picked up again in this next phase of the RHP. (Dr Roux, CSIR, Environmentek) Note that: RVI practitioners in the Northern Province are happy that it provides very useful data and information for the RHP for which it was developed and have the data to substantiate this. It may be a case that the RVI is used for the inappropriate purposes by some practitioners. (Dr Kleynhans, DWAF, Resource Quality Services)
2.15	It is also relevant to remember that SoR reports are produced from coarse data generated by the RHP indices.	Mr Piet Muller, Gauteng DACEL	
2.16	For some types of data, cause and effect relationships are known or can be established. In ecosystem assessments, expert opinion became more important but not necessary certified. Most of the RHP indices generate numeric values. The whole index is based on someone or a group of people's understanding of the particular indicator being used and of the ecosystem. It is a new paradigm to work with data that allows less certainty and predictability. The RHP has always functioned on the basis of using whatever methods are best today, with the understanding that there must be continuous improvement.	Dr Dirk Roux, CSIR, Environmentek	
2.17	The RHP has been designed to be a guidance system and to flag situations that require further investigation. It is acknowledged that methods must be repeatable and therefore they need to be calibrated for use in some areas.	Dr Neels Kleynhans, DWAF, Resource Quality Services	Repeatable results can be obtained with the Fish index if it is done in the same season and in the same habitat. The method however needs to be adjusted for different ecosystems. (Mr de Villiers, Department of Tourism, Environmental and Economic Affairs) The Fish index is in the process of being adjusted for Eastern Cape Rivers because of the low fish diversity. (Mr Dean Impson, Western Cape Nature Conservation)
2.18	Serious attention must be given to the expansion of the RHP to Water Management Areas (WMA) and there needs to be certified RHP practitioners in each of the WMAs.	Mr Bonani Madikizela, DWAF, Resource Quality Services	
2.19	It is recommended that several workshops should be held fairly soon to refine the RVI, Fish and Geomorphology indices as a matter of priority. These workshops should be	Mr Dean Impson, Western Cape Nature Conservation	

	COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
	repeated in about 2 years time.		
2.20	The initial focus of the RHP was on the biological response aspect of the ecosystem and not on the physical drivers of the system for instance, water quality was always accepted as important but the RHP only assessed biota. There was some development of the hydrological index but this did not go further. The geomorphology was developed further to indicate what information should be collected during an assessment. The correct place for the geomorphology index is to obtain a link between biological response and physical drivers. Therefore in the development of methods it is important to decide on whether to develop biological or physical indicators.	Dr Neels Kleynhans, DWAF, Resource Quality Services	
2.21	It should be indicated whether there would be standardization of the auditing process and certification of auditors on a national basis.	Mr Piet Muller, Gauteng DACEL	Provincial and national auditors must be certified and should receive remuneration for their time and further development of their expertise. (Mr Impson, Western Cape Nature Conservation; Mr Graham, Umgeni Water)
2.22	That it should be indicated why the RHP does not have a water quality index.	Dr Joy Leaner, CSIR, Environmentek	The RHP was developed as a response monitoring programme ie. how the ecosystem responds to multiple stressors. Water quality would be one of those stressors and to measure it directly would require a stressor monitoring system. There are a number of water quality monitoring programmes and the RHP is intended to be a complimentary programme focussed on response. The water quality index falls outside the response framework but helps in the interpretation of the results – it gives a cause/ effect perspective. (Dr Roux, CSIR, Environmentek)
2.23	SoR reports are compiled as information to managers and managers require information on flow and water quality now that the Reserve is an issue. Water quality assessments are done because they are required by the managers and therefore a water quality index should be standardized.	Ms Toni Belcher, DWAF, Cape Town	One monitoring programme should not be used as a "dump" for all sorts of data. It is a huge burden for one programme to carry in terms of water quantity, water quality and other data. The feasibility of such a scenario requires careful consideration. (Dr Roux, CSIR, Environmentek) The RHP has been developed as a status and trends monitoring programme. The Reserve came later with the new National Water Act and it is now important to link the Reserve and the RHP. It is agreed that one programme cannot provide all the answers. (Mr Madikizela, DWAF, Resource Quality Services)
3.	**INFORMATION TECHNOLOGY (IT) INFRASTRUCTURE**		
3.1	What are the implications of DWAF's new IT infrastructure for	Dr Dirk Grobler, Botsitso Business	DWAF has initiated a new process in terms of information systems. The

	COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
	the RHP?	Solutions	department has accepted the proposed new information system architecture (as was presented at the workshop). It is acknowledged that it would be difficult to move away from the current isolated systems in the department especially in terms of protectionism that has enabled the Department to succeed. The Department has to move from that culture to an open culture. There are sufficient supporters and energy in DWAF to make this work. In terms of the RHP linking to the new infrastructure, aspects such as national coordination, nurturing the local and regional dedication to the programme (which is the strength of the RHP) need to be considered. There also needs to be flexibility to accommodate these aspects. The national coordination aspect needs to be managed to collect, protect and make data available to users as efficiently as possible. It must maximize the data extraction process in order to get more out of the available resources. It must also have a level of control to identify shortcomings. (Mr Herman Keuris, DWAF, Water Resources Information Programme)
3.2	How would a user from anywhere in the country have access to DWAF's new information system.	Dr Andrew Deacon, Kruger National Park	The DWAF database will be accessible via the internet. If any problems are experienced the Water Resources Information Programmes Directorate at DWAF should be contacted. Information can also be made available on CD. (Mr Herman Keuris, DWAF, Water Resources Information Programme)
4.	**DATA MANAGEMENT AND STORAGE**		
4.1	Can data be imported directly from Excel worksheets to the Rivers database?	Mr Mick Angliss, Department of Finance and Economic Development	At the moment it is not possible to import data from Excel spreadsheets. However this has been identified as a need by RHP practitioners and therefore needs to be addressed in the next phase. (Dr Helen Dallas, Freshwater Research Unit, University of Cape Town)
4.2	That it should be indicated whether Southern Waters still handles problems related to the Rivers Database or has that function been taken over by DWAF: Resource Quality Services.	Dr Patsy Scherman, Coastal and Environmental Services	At the moment, Mr Pierre Janssen of Soft Craft deals with technical problems related to the Rivers Database. (Dr Helen Dallas, Freshwater Research Unit, University of Cape Town)
4.3	That it should be indicated whether the results (water quality data) of samples analysed by Resource Quality Services is entered into the Water Management Systems (WMS) Database.	Dr Patsy Scherman, Coastal and Environmental Services	Yes, water quality data is stored on the WMS. However, data is only entered for registered monitoring points. At present, the data on the WMS is not accessible to everyone. If data is required, a request must be forwarded to Resource Quality Services. The possibility of importing data through Hydstra is also being investigated.

	COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
			At present, ERWAT is entering data directly into the WMS. DWAF wants to extend this to other companies such as Sappi, Sasol etc. so that their monitoring data can be captured on the WMS too. (Mr Ulrich Looser, DWAF, Resource Quality Services)
4.4	Nature conservation agencies most often form part of provincial government departments and should be registered under government in the categories of users.	Mr Lindela Tshwete, DWAF: Resource Quality Services	Agree. (Dr Helen Dallas, Freshwater Research Unit, University of Cape Town)
4.5	That it should be indicated whether it would be feasible to link up the various university databases to the Rivers database and WMS and whether this will be a valuable exercise.	Mr Roger Bills, South African Institute of Aquatic Biodiversity	Databases such as the South African Institute of Aquatic Biodiversity (SAIAB) and Albany Museum databases are very important information resources. Whilst it is not feasible to incorporate these existing databases into the Rivers Database it should be possible to create links to them such that information stored in them can be accessed via the Rivers Database. (Dr Helen Dallas, Freshwater Research Unit, University of Cape Town) If data from these databases is included in the database then it has to be linked to monitoring sites or time. (Mr Ulrich Looser, DWAF, Resource Quality Services)
4.6	That it should be indicated how many monitoring sites also have a reference site.	Mr Bonani Madikizela, DWAF, Resource Quality Services	These are not differentiated in the database at this stage but at least 50% are reference sites. The database does have the facility to distinguish reference and monitoring sites. It is best to derive a reference condition from several reference sites, representative of a particular river type. (Dr Helen Dallas, Freshwater Research Unit, University of Cape Town)
4.7	Data from a voluntary non-accredited practitioner can be entered into the Rivers Database. Does the database have a facility to tag data from non-accredited practitioners?	Mr Bonani Madikizela, DWAF, Resource Quality Services	The source of the data is recorded in the database, as is the accreditation of the practitioner. As such, data from non-accredited sources is identifiable. (Dr Helen Dallas, Freshwater Research Unit, University of Cape Town)
4.8	There also needs to be a network version of the Rivers Database because more than one person at a time needs access. Also, the database should be designed to import data from Excel spreadsheets.	Dr Chris Dickens Umgeni Water	Noted. This can be addressed in the next phase. (Dr Helen Dallas, Freshwater Research Unit, University of Cape Town)
4.9	Investigate a way of incorporating the MiniSASS data onto the Rivers database as a separate component.	Mr Mark Graham, Umgeni Water	Noted. (Dr Helen Dallas, Freshwater Research Unit, University of Cape Town)
4.10	The Western Cape team has a problem with the Query Master feature of the database and the updating of data.	Ms Toni Belcher, DWAF, Cape Town	Will address. (Dr Helen Dallas, Freshwater Research Unit, University of Cape Town)
4.11	Most of the current data in the Rivers Database is as a result of a few individuals using the database. There has been a lot	Mr Mark Graham, Umgeni Water	Data transfer has been one of the stumbling blocks in the past, as well as resistance to change. (Dr Helen Dallas, Freshwater Research Unit,

	COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
	of investment in the development of the database and in training people to use it but it is not being used to its full extent.		University of Cape Town) Another factor is the resourcing of certain activities, timing and being in transit between phases of the RHP. (Dr Roux, CSIR, Environmentek)
4.12	There is a problem with disappearance of some data when exporting data to other people in the catchment.	Mr Piet Muller, Gauteng, DACEL	Noted. (Dr Helen Dallas, Freshwater Research Unit, University of Cape Town)
4.13	The Rivers database manual must be revisited because it is not user-friendly and the old manual does not work with the new version database.	Ms Christa Thirion, DWAF, Resource Quality Services	Noted. There is an electronic version of the manual with the latest version of the Rivers Database. (Dr Helen Dallas, Freshwater Research Unit, University of Cape Town)
4.14	Data acquisition, data management and information dissemination all together constitutes a monitoring programme. It is recognised that all monitoring programmes can link to the RHP - do we look at satisfying all these needs and what needs to be done first.	Dr Dirk Grobler, Botsitso Business Solutions	All of this can be done. The plan is to move data to the WMS, which can link monitoring points to a monitoring programme. This has already been designed. The next step will be to combine the different monitoring programmes. The infrastructure to transport all the data to the WMS would soon be available. (Mr Ulrich Looser, DWAF, Resource Quality Services)
4.15	It will also be investigated whether people using the Rivers Database would be able to load the data directly into the WMS when the two systems are linked.	Mr Ulrich Looser, DWAF, Resource Quality Services	
4.16	What role will Hydstra play in data management and storage?	Dr Themba Duma, DWAF, Resource Quality Services	Data capture will still be a function of the WMS. Hydstra has a different structure – it is more descriptive. Hydstra therefore does not play a role, not even in extraction of data. (Mr Ulrich Looser, DWAF, Resource Quality Services) The warehouse concept will be used. (Mr Herman Keuris, DWAF, Water Resources Information Programme)
4.17	Are there plans to make the WMS more user-friendly?	Mr Lindela Tshwete, DWAF, Resources Quality Services	Water quality management is complex and therefore it would be difficult to simplify the database without losing some of its functionalities. (Mr Ulrich Looser, DWAF, Resource Quality Services)
4.18	There is a need to have a database champion.	Dr Andrew Deacon, Kruger National Park	
4.19	Databases should not be issued to people upon request because most are consultants that do not do monitoring but use the data produced by others to make money. There needs to be stricter control on the issuing of the Rivers Database.	Mr Piet Muller, Gauteng DACEL	
5.	**STATE OF RIVERS (SoR) REPORTING**		

COMMENTS/ QUESTIONS/ SUGGESTIONS		CONTRIBUTOR/S	RESPONSE/ REMARKS
5.1	Are there other participants other than government that collaborate in SoR reporting?	Ms Mankone Ntsaba, Botsitso Business Solutions	Yes, water boards, universities and conservation agencies are involved in the collaboration. There is also a lot of goodwill in this regard from other parties. (Ms Wilma Strydom, CSIR, Environmentek)
5.2	There is concern that although the products are of a high standard they are not reaching the target audiences in the catchments.	Mr Dean Impson, Western Cape Nature Conservation	
5.3	The Free State RHP team would like to commend Ms Strydom and her team at the CSIR on the SoR report and poster that has been produced – it is not only a good marketing tool but is placing pressure on the Free State team to produce more of this type of information for other rivers in the province.	Mr Pierre de Villiers, Department of Tourism, Environmental and Economic Affairs	
5.4	In addition to launching a SoR report for example during Water Week there is also a huge need to communicate and actively engage stakeholders, even though the report may be simple enough.	Ms Toni Belcher, DWAF, Cape Town	
5.5	There should be more catchment reports, possibly every 5 years. Mini SoR reports on a monthly basis for the catchments in the areas I work would be more useful to me.	Mr Lin Gravelot-Blondin, DWAF, Durban	The monthly reports from Umgeni Water are intended to assist with management of particular rivers in a catchment, but the RHP SoR reports are based on a synthesis of 10 years of data. (Mr Hugh Dixon-Paver, DWAF, Durban)
5.6	That it should be indicated what other reporting products are produced by the RHP.	Ms Mankone Ntsaba, Botsitso Business Solutions	In the Western Cape, SoR reports serve as benchmark reports. Additional short technical reports are produced for managers on a more regular basis. (Mr Impson, Western Cape Nature Conservation)
5.7	SoR reporting is intended to detect changes in a river system.	Mr Piet Muller, Gauteng DACEL	
5.8	SoR reports have been described as the flagship reports of the RHP but they must not be given too much of emphasis. Data collection is far more important because it is dynamic and live. There is also a need for short technical reports.		Agree. There are a number of technical reports produced by the RHP and SoR reports do not replace any of these. (Dr Roux, CSIR, Environmentek) Agree. SoR reports take a lot of energy and money but should not be over-emphasized. The RHP needs to focus on the other information needs of its users. (Mr Impson, Western Cape Nature Conservation)
5.9	The RHP must produce different levels of information to serve different programmes. SoR reports must therefore be designed to capture all levels of information.	Dr Anneli Kuhn, DWAF, Resource Quality Services	
5.10	Technical reports are essential but it is not necessary to produce a SoR report from every technical report. SoR reports help with marketing for eg. to landowners. Technical reports are used to engage people on the ground and to assist in the understanding of the river system.	Mr Mick Angliss, Department of Finance and Economic Development	

COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
5.11 That monitoring should not stop once a SoR report has been compiled for a particular river. It is of concern that SoR reports are used mainly for marketing the RHP rather than a source of useful information.	Mr Lindela Tshwete, DWAF, Resource Quality Services	
5.12 There is a significant amount of information available from the DWAF databases if the RHP were to include surface water quality monitoring.	Mr Lin Gravelot-Blondin, DWAF, Durban	
5.13 There needs to be a suite of information products at different levels of technicality produced at different frequencies. One product cannot serve all the information needs of the programme.	Dr Dirk Grobler, Botsitso Business Solutions	
5.14 There is a need to look at the legislation when considering the suite of requirements. This will enable DWAF to allocate resources towards the coordination of these requirements. The re-structuring of the Department will assist in making the coordination of certain aspects easier.	Mr Mbangi Nepfumbada, DWAF, Chief Directorate: Water Resources Information Management	
5.15 Communication, SoR reporting and capacity building are all closely linked but these seem to be separate components in the RHP with capacity building not even featuring. There should be a task team to plan the way forward in this regard because this is a critical factor for the sustainability of the RHP.	Mr Derek Weston, DWAF, Catchment Management	
6. GOVERNANCE		
6.1 Data sharing and management forms part of governance. The RHP has brought many people together because of the sharing of data, where some people collect data, some extract it and others sell it. Umgeni Water for example collects data but has to compete against others who do not, when tendering for work. This is when giving away intellectual property becomes an issue.	Dr Chris Dickens, Umgeni Water	Agree. This is a sensitive issue that the Programme has not management to solve over the years. One of the objectives of the RHP is to strive towards a freely available data pool. (Dr Dirk Roux, CSIR, Environmentek) The issue of intellectual property is an important one and DWAF is in the process of trying to appoint someone to plan the way forward in this regard. (Mr Nepfumbada, DWAF, Chief Directorate: Water Resources Information)

COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
6.2 There is concern that the RHP is currently run by volunteers and that when a Provincial Champion or key person leaves the programme then there is no continuation. There needs to be a national coordinator to ensure that the RHP does not only run through the efforts of individuals. Also, the RHP does not seem to be building capacity because the same people are involved throughout the years. Capacity building is key to ensuring the sustainability of the RHP. There is only 17% black participation – these demographics need to be changed and the RHP must be transformed. Black universities must be actively engaged to participate.	Mr Lindela Tshwete, DWAF, Resource Quality Services	The RHP is a DWAF programme and for it to be sustainable it must be institutionalised. DWAF Regional Offices need to take the lead and take the responsibility for the RHP in the regions. This will allow for building capacity. The institutionalisation of the RHP will ensure that the RHP is included in the business plans of each DWAF regional office. (Mr Bonani Madikizela, DWAF, Resource Quality Services) The Western Cape has a strong PDI representation. The DWAF regional office in Cape Town plays a strong role in the RHP because of capacity and availability of funds. This may not be the case in other provinces. (Mr Dean Impson, Western Cape Nature Conservation) The role of the regional offices is acknowledged however where there are more that one regional office per province, as in the North West Province there must be coordination between the offices to ensure that the RHP operates smoothly. (Ms Tharina Boshoff, North West DACE)
6.3 The Institute for Natural Resources in Pietermaritzburg is involved in many projects on estuaries in the Eastern Cape. The Estuaries Management Programme should be included in the RHP as this will allow the sharing of lessons learnt and benefit the RHP.	Nhlanhla Sihlophe, Institute for Natural Resources, Pietermaritzburg	The RHP can learn many lessons from other programme and it is therefore important to formalize responsibilities and accountabilities towards effective governance, not only in RHP but also in society. (Ms Ernita van Wyk, CSIR, Environmentek)
6.4 Working in the marine and estuarine fields especially in Saldana Bay where there is a high density of industries, it is interesting to note that these industries came together to form a trust to contract resources in to do water quality monitoring. A water quality forum was also established. This initiative was started by DWAF.	Ms Susan Taljaart, CSIR, Environmentek	
6.5 Contagious leadership could be referred to as contagious and transformational leadership because the new National Water Act with its many new regulatory requirements came after the formulation of the RHP. Governance in the RHP can become the flagship of the programme. On 11 February 2004 DWAF will we holding a workshop towards sustainability of the RHP in Water Management Areas. There is a strong drive from DWAF in this regard.	Mr Bonani Madikizela, DWAF, Resource Quality Services	
6.6 There is a paradigm shift towards environmental governance and public participation etc. and the Environmental Conservation Act can be used as a tool to form cooperation agreements between various partners.	Ms Tharina Boshoff, North West DACE	

COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
6.7 The RHP's weak points relate to accountability, professionalism, partnerships and capacity, as a result of a lack of coordination at national level. Therefore it is appropriate to extend the role of DWAF by involving the regional offices to bring management and infrastructure to the programme. Accountability, professionalism, partnerships and capacity are key to the long-term sustainability of the RHP and therefore it is important to choose the right type of people to provide leadership in these areas.	Dr Dirk Grobler, Botsitso Business Solutions	
6.8 The RHP is working in some of the provinces because there is commitment and ownership. There however needs to be national coordination to ensure that short-comings at provincial level are addressed and to ensure that there are resources in place to sustain the programme in the provinces.	Mr Pierre de Villiers, Department of Tourism, Environmental and Economic Affairs	
6.9 The national level should look at provinces critically in terms of success in implementing the RHP and the problems experienced by those that have not. The successful models could be used in provinces that are lagging behind. It is important that this is driven from the national level.	Mr Dean Impson, Western Cape Nature Conservation	
6.10 The issues of how DWAF regional offices work in terms of provincial and regional boundaries must be taken into consideration. Gauteng DACEL has included the RHP in its business plan. Rivers in Gauteng fall in three catchments, flow through 5 provinces and the province has 3 DWAF regional offices. Such issues need to be taken into consideration.	Mr Piet Muller, Gauteng DACEL	There are regional offices, CMAs in WMAs and provincial level structures and the key would be to interface with these and to integrate with their structures and mechanisms. (Dr Grobler, Botsitso Business Solutions)
6.11 The DWAF regional director's aim is to collect money. Where does integration come in for eg. where the forestry sector is paying a catchment management levy and a consultant to do monitoring in other words they are paying twice. This needs to be investigated.	Mr Hugh Dixon-Paver, DWAF, Durban	Monitoring costs have not been included in catchment management costs. Funds collected per WMA are ring-fenced and will be used in that WMA. (Mr Herman Keuris, DWAF, Water Resources Information Programme)
6.12 The success of the RHP is through the enthusiasm of the people involved and because of the availability of funding. Enthusiasm is the key ingredient to making the RHP work and it needs to be stimulated where it does not exist. Capacity building is also key to the sustainability of the programme and therefore it is important to involve whole teams in the RHP.	Ms Toni Belcher, DWAF, Cape Town	

COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
Careful consideration must be given to assigning responsibility for the RHP to regional offices because many of the regional offices are already overloaded.		
6.13 Need to consider how information needs link to management of water resources. The RHP will be sustainable if managers require the information it generates.	Dr Anneli Kuhn, DWAF, Resource Quality Services	
6.14 Nedbank should be approach as a partner in the RHP as they sponsor other environmental type programme.	Mr Hugh Dixon-Paver, DWAF, Durban	Several such organisations were approached in the past but to date we were not successful in securing private/ corporate sponsorship or commitment to partnerships. (Dr Roux, CSIR, Environmentek)
7. COMMUNICATION		
7.1 There is a need to record at national level, the RHP-related communication activities taking place in the provinces. When CMAs are established they will serve as a marketing mechanism for the RHP.	Mr Derek Weston, DWAF, Catchment Management	
7.2 The communication component of the RHP should be linked to the RHP website.	Mr Piet Muller, Gauteng DACEL	
7.3 In terms of creating awareness and interest in the programme, the communication component should create a mentorship component to encourage involvement of new people and to assist with capacity building.	Mr Umesh Bahadur, Gauteng DACEL	
7.4 Email communication between the national office and provinces and others is an effective method of communication.	Ms Toni Belcher, DWAF, Cape Town	
7.5 Municipalities do not seem to be involved in the RHP.	Ms Tharina Boshoff, North West DACE	Local authorities are involved actively in some of the provinces for example Durban Metro in KZN and Cape Metro in the Western Cape. Municipalities are included on the RHP database and receive RHP communication products but it must be borne in mind that most municipalities do not participate because of capacity constraints. (Ms Vassie Maharaj, Zitholele Consulting)
7.6 Consideration should be given to the preparation of a State of the RHP report.	Mr Dean Impson, Western Cape Nature Conservation	A State of the RHP report has been compiled for the Free State Province and it would be a good idea to have one for each of the provinces. (Dr Roux, CSIR, Environmentek)

COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
7.7 Fish kills and similar incidents should be used as a tool to create sensationalism and interest in the RHP – demonstrating that RHP indices are used to address problems.	Mr Dean Impson, Western Cape Nature Conservation	
7.8 The RHP website should be linked to the Vision 20/20 Schools programme in order to create interest in the RHP amongst school children.	Ms Naledi May, DWAF, Water Resources Information Management	
7.9 The implications of the RHP corporate logo and colours need to discussed and decided upon.	Mr Mark Graham, Umgeni Water	
8. RESEARCH AND DEVELOPMENT		
8.1 It is important to have research and development around method development but this must be linked to other initiatives. It should involve preparing templates for assessments, establishing reference sites, eco-regions etc and population of the database with information. This developmental work is essential for the sustainability of the RHP.	Dr Neels Kleynhans, DWAF, Resource Quality Services	
8.2 It is important to retain samples from monitoring especially those that are different as this adds to the knowledge and understanding of the taxa and assists in the refinement of method like SASS. Collection of voucher samples for universities and museums must be marked with date, place and other details. RHP practitioners should contact these institutions to find out what samples are required for the collections. Fish samples are a requirement at this stage.	Mr Roger Bills, South African Institute of Aquatic Biodiversity (SAIAB); Dr Ferdy de Moor, Albany Museum	Agree. Reference collections must be made when sampling a site for the first time. Significant resources (time and money) are invested in sampling and so when a reference site is assessed a reference collection should be made and sent to an appropriate institution such as the Albany Museum or SAIAB. (Dr Helen Dallas, Freshwater Research Unit, University of Cape Town) Sample collection inventories are important for RHP development. The information at museums will be a used by the RHP in the future. It is important also for the museums to advise monitors how to collect and preserve these samples. (Mr Dean, Western Cape Nature Conservation)
8.3 Many consultants use RHP indices and there is a need for a standardized manual to be compiled because the indices are not being used in a standard way.	Mr Dean Impson, Western Cape Nature Conservation	It is very important that all development and refinement of methods is completed, the methods should then be properly validated and published to prevent variations in their use. (Dr

COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
		Dickens, Umgeni Water)
8.4 Must bear in mind that the RHP tools need to be simple for resource managers to feel comfortable to use. Need to work at family level not species level in order for methods to be simpler.	Mr Bonani Madikizela, DWAF, Resource Quality Services	
8.5 There is need to keep methods within the context of the RHP because one could easily fall into the trap of re-doing the methods and then not being able to use them. There is a need to be pragmatic. There also needs to be a link between RHP and Resource Directed Measures (RDM) – the adaptive resource management process.	Dr Neels Kleynhans, DWAF, Resource Quality Services	
8.6 Umgeni Water is working together with KZN Wildlife sampling 50 sites in the province. There is a huge gap in the data because the RVI method does not document species and this information is required by the Working for Water Programme and the KZN Parks Board. It is therefore important to have a sound RVI method and the RHP should take responsibility for the development of the RVI methodology.	Dr Chris Dickens, Umgeni Water	Note that: RVI Practitioners in the Northern Provinces are happy that it provides very useful data and information for the RHP for which it was developed and have the data to substantiate this. (Dr Kleynhans, DWAF, Resource Quality Services)
8.7 The IHAS method also needs further development and research into whether the results are valid.	Dr Helen Dallas, Freshwater Research Unit, University of Cape Town	
8.8 It should be indicated why some of the methods like HAM and others that were identified in the initial planning of the RHP have not been developed further.	Mr Mark Graham, Umgeni Water	This was due to the ongoing issue of limited budget so only the priority indices were developed further. The other methods formed part of a wish list. (Dr Dickens, Umgeni Water)
8.9 A power analysis is required for SASS and the Fish index – this sensitivity analysis is also required for other RHP indices.	Dr Neels Kleynhans, DWAF, Resource Quality Services	
8.10 In terms of sustainability of the RHP, fishing clubs should be encouraged to become involved by recording their catches and providing the data to RHP.	Mr Derek Weston, DWAF, Catchment Management	
8.11 The SASS method is fairly well developed. RVI did not go through the full testing phase and still needs a lot of development work.	Dr Chris Dickens, Umgeni Water	It is important to remember that the information used to refine the RVI method needs to be recorded from the beginning as reference material. This will assist in problem solving as it is essential to have proper information in order to solve problems. (Dr de Moor, Albany Museum)

COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
8.12 It must be recognised that there has not been a research and development budget during the last few years of the RHP. Stabilization and testing of the five cornerstone RHP indices should be the first priority of the next phase of the RHP in terms of research and development.	Dr Dirk Roux, CSIR, Environmentek	
8.13 There is a need to focus on technical reports because it is necessary for eg. to trace how fish scores were determined. Thresholds of Potential Concern (TPC) are critical sources of information for managers and need to be captured in technical reports.	Mr Dean Impson, Western Cape Nature Conservation	
8.14 There needs to be more focus on data interpretation and how managers will use data.	Dr Helen Dallas, Freshwater Research Unit, University of Cape Town	
8.15 The RHP has always been dependant on the Water Research Commission (WRC) to fund research and development and often only projects that are important to the WRC were funded. The research and development component of the RHP must be institutionalised.	Mr Mark Graham, Umgeni Water	The WRC has supported a number of RHP-related research and development activities in the past. However, there now needs to be negotiations between the WRC and DWAF to take research and development in the RHP to a higher level. (Dr Roux, CSIR, Environmentek) It is also important to link research and development to universities as they are a good resource that can be sustainable. (Ms Toni Belcher, DWAF, Cape Town)
8.16 The RHP needs to make resources available in areas of need like targeting institutions of higher learning and making available scholarships for eg. MSc in RHP/ monitoring and similar fields. This is an opportunity to change the current status of the RHP in terms of capacity and representivity. There is a need to promote partnerships to encourage opportunities. A further challenge is related to the issue of attitude. There must also be a commitment to ensuring that people are capable of doing the jobs they have been appointed to do.	Mr Mbangi Nepfumbada, DWAF, Chief Directorate: Water Resources Information Management	The issue of creating capacity is also linked to job security, students need to know that what they are studying will give them job security. (Ms Tovho Ndiitwani, DWAF, Cape Town)

COMMENTS/ QUESTIONS/ SUGGESTIONS		CONTRIBUTOR/S	RESPONSE/ REMARKS
9.	**INTEGRATION**		
9.1	For integration to work there needs to be communication on what the needs and requirements are.	Mr Mark Graham, Umgeni Water	
9.2	Monitoring has 3 core functions 1) data acquisition, 2) data management 3) information generation and dissemination. At present, the RHP as a monitoring programme has many gaps for example how are RHP products linked to the information needs of stakeholders. In order for RHP to achieve the status of a full monitoring programme a rigorous integration of the above 3 components must be achieved and also linked to governance aspects.	Dr Dirk Grobler, Botsitso Business Solutions	
9.3	In order to achieve the RHP goal of reporting on all major rivers in the country by 2007, the programme would need to urgently put a project management and technical integration function into place.	Dr Dirk Roux, CSIR, Environmentek	
9.4	The RHP national coordinator needs to be a good manager, good coordinator and good motivator.	Dr Andrew Deacon, Kruger National Park	
9.5	RHP Provincial Champions need to have a committed support person to drive and motivate the provincial teams. This is the situation in the Western Cape and it works well.	Dr Joy Leaner, CSIR, Environmentek	
9.6	Implementation of the RHP must be a team effort. At present the RHP needs to do a status quo assessment – what is there, what is working, what is not and the reasons for this, and then plan the way forward. The re-structuring of the Department and the formation of the clusters is likely to add momentum to the programme. The regional offices could perhaps be empowered through the clusters.	Ms Toni Belcher, DWAF, Cape Town	
9.7	The technical component of the RHP needs to be fairly autocratic.	Dr Chris Dickens, Umgeni Water	
9.8	That regional technical reports should be made available on the RHP website.	Mr Roger Bills, South African Institute of Aquatic Biodiversity	
9.9	How should the estuaries work be linked to the RHP and other programmes in terms of integration.	Nhlanhla Sihlophe, Institute for Natural Resources, Pietermaritzburg	Ms Barbara Weston from DWAF is driving the estuaries component and is working on indices for estuaries based on RHP indices. Similar work is being done for wetlands. These are the steps towards integration in water resource management that the Department is striving towards. (Mr Madikizela, DWAF, Resource Quality Services)

COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
9.10 There is integration in the Eastern Cape between the DWAF regional office and other institutions like the Albany Museum and Institute for Water Research.	Mr Lindela Tshwete, DWAF, Resource Quality Services	
9.11 To date the RHP has produced a significant amount of good work. It may be useful to set national, provincial and local milestones. Produce a State of the RHP report addressing - where we are, what we have, where do we want to be and what do we need to achieve our goals.	Mr Umesh Bahadur, Gauteng DACEL	These components are key to what the RHP needs for integration. The programme needs to articulate what it wants to achieve. It must be recognised that there has been a lull in the programme but that a lot has already been achieved in the informal manner in which the programme has operated. (Dr Dirk Roux, CSIR, Environmentek) The lack of coordination during the "lull" period of the programme resulted in situations where there was no integration for eg. the Olifants River being surveyed by 3 different provinces. (Mr Dean Impson, Western Cape Nature Conservation)
9.12 It must be recognised that there is a lot of planning and integration between the various organisations at provincial level, especially in those provinces where the RHP is successful.	Mr Pierre de Villiers, Department of Tourism, Environmental and Economic Affairs	
9.13 The RHP should formalize the link to RDM.	Mr Derek Weston, DWAF, Catchment Management	There should be an RDM monitoring programme that incorporates all other monitoring programmes including the RHP. (Dr Grobler, Botsitso Business Solutions) There is need for a short-term monitoring programme for RDM. The RDM procedure is designed to set the Reserve and Resource Quality Objectives (RQOs) and RHP is designed to check that the Reserve and RQOs are achieved, therefore the two must be linked. (Dr Dickens, Umgeni Water**).** The link must be made, however, this is a major oversimplification – the Directorate:RDM should be consulted around this but the aim of the RHP was never to directly assess the achievement of the ecological reserve category. There are many areas/streams where ecological reserves will not be determined for a very long time (license applications). The compliance/conformance monitoring for the ecological reserve should, due to its very nature be addressed separately. Its information can logically feed into the RHP, while the RHP data at a site (or nearby site) can be used as the initial starting point to collect more data (also habitat, flow and water quality) for the assessment of conformance/compliance (this will also be linked to the initial selection of sites used for the specification of the ecological reserve). (Dr Kleynhans, DWAF, Resource Quality Services) RHP monitoring helps in informing DWAF how to issue a licence and whether the Reserve will be met. There is definitely a link. (Ms Toni

COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
		Belcher, DWAF, Cape Town)
9.14 There are different levels of monitoring that is required for different levels of Reserves. Some of the requirements will be addressed by the RHP and others by the other monitoring programmes. RHP is not designed to supply specialist monitoring information – it merely gives the overall picture.	Ms Toni Belcher, DWAF, Cape Town	A resource monitoring programme was developed for the RDM work on the Tugela River. It is crucial that the different levels of information requirements are satisfied by such a programme. Baseline data is required to set the Reserve and RQOs and routine RHP monitoring can be used to check that the Reserve and RQOs are achieved. (Ms Susan Taljaart, CSIR, Environmentek)
9.15 Consideration should be given to expanding the RHP across provincial borders, even into Swaziland and Lesotho.	Mr Roger Bills, South African Institute of Aquatic Biodiversity	
9.16 Monitoring the Reserve can be done using other monitoring programmes. The chances of Reserve monitoring sites coinciding with RHP national monitoring sites must be investigated. There is a need to integrate information from the different monitoring programmes in terms of RQOs.	Mr Bonani Madikizela, DWAF, Resource Quality Services	
9.17 There is need to stress the traditional pollution control monitoring that traditionally focused on chemistry. Monitoring for compliance to water use licence requirements serves as a tool to expand that traditional type of monitoring to other parameters in river health. This needs to be integrated with RHP and RDM so that there are not different levels of monitoring taking place at the same site.	Mr Hugh Dixon-Paver, DWAF, Durban	
9.18 The Nkomati Catchment Management Forum is in the process of developing a catchment management strategy and this is an opportunity to ensure that the RHP is included in the strategy.	Mr Derek Weston, DWAF, Catchment Management	
9.19 The RHP lends itself to the dangerous situation of having good products but not knowing exactly who the client is. It is essential to strategize around this and actively engage the client/s.	Mr Herman Keuris, DWAF, Water Resources Information Programme	The clients are difficult to define because they are wider than just water resource managers. (Dr Roux, CSIR, Environmentek) There is a good understanding of who the client is but the reason for them not using the information is not known. (Ms Toni Belcher, DWAF, Cape Town)
9.20 How will provinces that do not have resources and are lagging behind in RHP implementation be assisted to move forward.	Mr Junior Nkuna, DWAF, Kimberley	The RHP has always been based on knowledge sharing between the provinces and this has assisted in adding momentum to provinces that are lagging behind. A number of initiatives were undertaken to start the programme in the Northern Cape but were not successful. (Dr Roux, CSIR, Environmentek) The Free State team will assist in training people in the Northern Cape, in collaboration with the DWAF regional office. (Mr de Villiers, Department of Tourism, Environmental and Economic Affairs) Resource Quality Services have surveyed the Orange River. (Ms Christa

COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
		Thirion, Resource Quality Services) There is also a lot of data available for the Northern Cape from work that Dr Rob Palmer has done. (Dr de Moor, Albany Museum)
9.21 There is concern that there is no demand from DWAF for RDM data in which RHP monitoring would play a key role.	Dr Chris Dickens, Umgeni Water	
10. SUPPORTING HEALTH MONITORING OF OTHER AQUATIC RESOURCES		
10.1 When the RHP was initiated, it was agreed that the focus should be on rivers as a starting point. Much progress has been made and several other developments have taken place. The timing is now right to expand the focus to other aquatic systems such as estuaries, and to introduce "sister programmes" for these systems.	Dr Dirk Roux, CSIR, Environmentek	In terms of the national Water Act estuaries must be included. Because an estuary is an integral part of a river. (Ms Toni Belcher, DWAF, Cape Town; Ms Susan Taljaart, CSIR, Environmentek)
10.2 Estuarine health assessments are often very costly because of the limited expertise and resources. The challenge to estuarine practitioners is to develop an index that does not involve high level science and high costs.	Mr Dean Impson, Western Cape Nature Conservation	
10.3 Wetland, estuarine and river monitoring practitioners are all different and therefore should remain as separate entities within the RHP.	Dr Chris Dickens, Umgeni Water	
10.4 The RHP needs to explore forming a partnership with the Working for Water Programme because they are keen to use RHP indices and this may assist in unlocking funds.	Mr Dean Impson, Western Cape Nature Conservation	Obtaining buy-in and establishing a link with the Working for Water Programme must be driven from the national level. (Mr Graham, Umgeni Water) The RHP has attempted to form this link in the past, but was met with little enthusiasm from the Working for Water Programme. Perhaps the timing is more favourable to do so now. (Dr Roux, CSIR, Environmentek)
10.5 Both, water quality and water quantity aspects are important to estuaries. DWAF works closely with DEAT coastal management in a collaborative effort towards a common goal regarding estuaries. The first State of the Estuaries report was done in the 1990s. A Consortium of Estuaries Research and Management (CERM) was formed and was responsible together with DWAF for the development of the Reserve	Ms Susan Taljaart, CSIR, Environmentek	

COMMENTS/ QUESTIONS/ SUGGESTIONS	CONTRIBUTOR/S	RESPONSE/ REMARKS
methodology for estuaries. This was done with funding from the Water Research Commission. The Reserve methodology has been approved. Much work has already been done on estuaries and there is a significant amount of information available. DWAF needs to approach CERM in order to establish how this information can be used to compliment the RHP. There is also a need for training on how to use RHP indices for estuaries.		
11. THE WAY FORWARD		
11.1 That the actual resolution of the different components and how they will be refined must be clearly defined.	Mr Mark Graham, Umgeni Water	
11.2 Many key issues were covered during the workshop but what happens from here on is of critical importance.	Mr Dean Impson, Western Cape Nature Conservation	
11.3 Refinement of methodologies should feature as a priority in the way forward.	Ms Tharina Boshoff, North West DACE	
11.4 All workshop participants should be given an opportunity to comment on the Terms of Reference of the RHP before it is submitted to DWAF.	Mr Dean Impson, Western Cape Nature Conservation	Note that the Terms of Reference will be generic at this stage and that a detailed scope of each component will be defined in the individual contracts. (Mr Mbangi Nepfumbada, DWAF, Chief Directorate: Water Resources Information Management)
12. GENERAL		
12.1 Announcement: Fisheries Policy Workshop Mr Pierre de Villiers announced that he has been tasked to develop a national fisheries policy for South Africa. It will include fresh water fisheries and aquatic biodiversity. All those interested are encouraged to attend a workshop from **24-27 February 2004 at the Willem Pretorius Reserve in the Free State** in order to make a difference towards standardising the fisheries policy in South Africa. It is essential that every province is represented. Participants should please source old legislation, new legislation, existing policy and provide a gap analysis for their respective provinces. A follow-up working group meeting will be held in March 2004.		Anyone that would like to attend or for more details in this regard, contact Mr Pierre de Villiers at Cell: 083 236 2924 or E-mail address: devilp@dteea.fs.gov.za

10 RECAP AND FEEDBACK OF OVERALL WORKSHOP

The facilitator presented a recap of the overall outcomes of the workshop, preceded by a brief summary of the general attributes of a national monitoring programme. His presentation is summarised below.

10.1 Hierarchy of information requirements for the management of water resources

The facilitator explained that in order for a programme such as the RHP to function efficiently it must align with a hierarchy of information requirements for the management of water resources. This means that many people at different levels have to achieve many different things towards their specific goals, all ultimately contributing to the overall goal of the programme. Therefore, the types of monitoring and measurement of achievement at each level will differ because the targets at each level are different.

The three core functions of a monitoring programme are:

- Data acquisition
- Data storage and management
- Information generation and dissemination.

He pointed out that a monitoring programme should not produce complex knowledge products like Resource Quality Objectives. It is essential for the programme to identify its information users, particularly the primary information users, and then to establish their needs and how to address them.

Other important components of a monitoring programme include IT infrastructure (hardware and software applications) and alignment to the Strategic Framework for Monitoring and Assessment, where there will be a portfolio of national monitoring programmes driven by DWAF, a portfolio of monitoring programmes for each Catchment Management Agency and a portfolio of monitoring programmes for each water user or local area. Data acquisition must be done at a local level although the programme is owned and funded by national DWAF, who have to take the responsibility of ensuring that this monitoring takes place.

Management and storage of data must be controlled at a national central level. The information generation and dissemination function of a monitoring programme differentiates specific products to specific clients.

He noted that in moving to the next phase of the RHP, it is important that terminology is standardised in order to avoid misunderstanding.

10.2 Discussion

The comments, questions, suggestions, remarks and responses contributed during the discussion session are recorded under category 10 (Supporting health monitoring of other aquatic resources) of the Comments Report in section 9 of these proceedings.

10.3 Feedback on overall workshop

In summarising the feedback on the workshop, the facilitator noted the following:

- That the workshop facilitated useful discussion and input regarding the roll out of the national RHP especially in terms of the needs, re-establishing networks and moving towards creating a sustainable RHP
- That the RHP has evolved over the years with little governance but in order for it to be sustainable there needs to be more structure and guidance
- State of Rivers reporting is only one of the products to be generated by the RHP
- Communication is one of the successful areas of the past phases of the RHP and needs to be expanded to create better coordination and integration throughout the programme
- Further research and development is required to increase the robustness of the primary indices

- Equally important to integration within the RHP, is integration between the RHP and the estuarine component
- That there is need to expand the RHP to other aquatic ecosystems in terms of DWAF's strategic framework for monitoring.

10.4 Discussion

The contributions made during the discussion session regarding feedback on the workshop, are captured under category 11 (The way forward) of the Comments Report in section 9 of these proceedings.

11 THE WAY FORWARD AND CLOSING REMARKS

Mr Nepfumbada's presentation of the way forward for the RHP is summarised below.

11.1 General remarks

Mr Nepfumbada noted that the RHP after a decade of activities and good success since its humble beginnings in 1994, is a flagship programme that demands appreciation and acknowledgement for its achievements, but which needs structured support. It is a programme from which to learn and discern best practices within the context of new mandates and responsibilities.

He pointed out that it is important for terminology to be standardised before proceeding further with the programme in order to avoid confusion and misunderstanding.

11.2 Implications for legislative mandates

The RHP would need to consider the implications of the following legislative mandates:

- Long-term monitoring that is status and trend monitoring (Chapters 3 and 14 of the National Water Act)
- Resource protection, that is Resource Directed Measures (Chapter 3 of the National Water Act)
- Compliance/ auditing monitoring
- Impact assessments
- Cooperative governance (National Environmental Management Act)
- Performance (organisational)
- DWAF's restructuring is geared to implementation of the National Water Act.

11.3 Where to from here?

Mr Nepfumbada outlined the scope and requirements for the RHP as follows:

- National information/ data generation and dissemination
- Coordination of monitoring activities at all levels, where the national level will strategically provide and support the ingredients of the "glue" that keeps the RHP together
- Resourcing at different levels within the new legislative framework, including new institutions.

11.4 Governance

In terms of the governance in the RHP, he pointed out that statutory and non-statutory institutions in a largely centralised environment would require amongst others:

- Cooperative approaches
- Setting acceptable role descriptions, rules, regulations, guidelines and processes
- Resourcing; and
- Accountability to clients.

11.5 Capacity building, education, training and awareness

He noted that capacity building, education, training and awareness are all central to the sustainability of the RHP. There must be an appropriate analysis of the resource needs. In terms of implementation requirements, more capacity will be required at regional and Water Management Area level. The challenge however is to address transformation in its broadest sense in terms of representivity and ensuring that what is intended by policy and legislation, is achieved.

11.6 Immediate activities

Mr Nepfumbada noted that the immediate activities following the workshop as follows:

- Consolidate activities identified in this planning workshop
- Submission of the Initiation and Planning report to DWAF for approval
- Establish task teams, champions at regional level and/ or drivers at national level, for the various activities or portfolio of activities
- Coordinated implementation of activities nationally
- Programme management and financial coordination of the approved activities by DWAF and the CSIR
- Possible technical workshop and annual symposium to ensure support for research and development.

11.7 Procurement and resourcing

The following aspects need to be borne in mind in terms of procurement and resourcing:

- DWAF will develop the Terms of Reference for approved technical aspects and thereafter there will be a call for professional service providers to tender
- DWAF encourages the formation of consortia (including black economic empowerment initiatives) to address the capacity issues in the industry and in DWAF and other implementing agencies
- It is important to note the partnerships with the Water Research Commission and the Department of Environmental Affairs and Tourism (DEAT).

11.8 Acknowledgments

Mr Nepfumbada extended a special token of appreciation to the following groups and organisations for their contributions to the RHP:

- Provincial champions and the organisations they represent
- Tertiary institutions
- Colleagues from DWAF Head Office and Regional Offices
- Partners in taking the RHP forward, namely the CSIR, Water Research Commission and DEAT
- Workshop organisers, in particular Ms Liesl Hill and her team for their sterling efforts in making this workshop a success.

11.9 Discussion

The comments, questions, suggestions, remarks and responses contributed during the discussion session are recorded under category 11 (The way forward) of the Comments Report in section 9 of these proceedings.

12 CLOSURE

In closing the meeting, the facilitator thanked participants for their attendance and valuable inputs.

The meeting closed at 16:00.

APPENDIX 1

LIST OF PARTICIPANTS THAT ATTENDED THE PLANNING WORKSHOP

APPENDIX 2

CURRENT STATUS OF RHP IMPLEMENTATION AND DATA ACQUISITION

APPENDIX 3
QUALITY ASSURANCE

APPENDIX 4

INFORMATION TECHNOLOGY (IT) INFRASTRUCTURE

APPENDIX 5 A

DATA MANAGEMENT AND STORAGE

(Mr Ulrich Looser)

APPENDIX 5 B

DATA MANAGEMENT AND STORAGE

(Dr Helen Dallas)

APPENDIX 6

STATE OF RIVERS REPORTING

APPENDIX 7

GOVERNANCE

APPENDIX 8

COMMUNICATION

APPENDIX 9

RESEARCH AND DEVELOPMENT

APPENDIX 10

SUPPORTING HEALTH MONITORING OF OTHER AQUATIC RESOURCES