

RIVER HEALTH PROGRAMME

Proceedings of the Provincial Champions Symposium held on 21st and
22nd June 2005 at Grasdak, Pretoria

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DAY 1: Tuesday, 21st June 2005

1. ATTENDANCE

The Symposium was attended by 31 participants including members of the River Health Programme (RHP) Management Committee, the RHP National Co-ordinating Team (NCT), RHP Provincial Champions and members of Provincial Implementation Teams. The names and contact details of participants are appended to these proceedings.

2. APOLOGIES

Mr Cilliers Blaauw (DWAF), Ms Tharina Boshoff (North West Province), Dr Helen Dallas (The Freshwater Consulting Group), Dr Anneli Kuhn (DWAF), Dr Heather MacKay (WRC), Mr Mbangiseni Nepfumbada (DWAF), Mr Wandile Nomqophu (DWAF), Dr Rudi Pretorius (DEAT), Dr Patsy Sherman (Coastal and Environmental Services), Mr Niel van Wyk (DWAF).

3. WELCOME

After registration and lunch, Dr Dirk Roux extended a warm welcome to participants and thanked them for attending. He introduced Ms Shamilla Jhupsee who, as RHP Co-ordinator, would be co-facilitating the symposium with him. Dr Roux extended a special word of welcome to Dr Quentin Espey, the new Director of DWAF's Resource Quality Services (RQS); he went on to explain that the RHP falls under the RQS (previously known as the Institute for Water Quality Studies) of the Dept of Water Affairs and Forestry (DWAF).

Dr Quentin Espey, in his capacity as the new Chairperson of the RHP Steering Committee, then took the floor and said how pleased he was to see the regional office representatives from DWAF at the Symposium and to have a chance to meet the Provincial Champions. He confirmed that he would be supporting the continuation of the RHP within the RQS of DWAF and mentioned that he was still in a learning phase regarding the RHP.

4. INTRODUCTION AND OBJECTIVES

4.1 Dr Quentin Espey

Dr Espey said he agreed with Dr Roux that the RHP has gone through an initial phase and is now reaching the point of maturity. He went on to give a previous quote by Dr Roux: *"The final test of the RHP will be in the degree to which information resulting from it will become part of decision-making in water resource management"*. He stressed that scientists and technical people need to think laterally and actually ensure that resulting information is used to create something better, i.e. better aquatic systems - according to whatever objectives are set. In a middle income developing country like South Africa the most must be made of existing human and financial resources available. Dr Espey gave the following five interlinking points towards dealing with issues of sustainability and relevance:

- i) **The actual continuation of the RHP in all 19 CMAs as they develop** - what is happening must be aligned with the CMAs. Implementation needs to be at a minimum standard level throughout, including in the poorest and most inaccessible parts of the country.

- ii) **The finalization of the alignment of the RHP with the requirements of the Water Act through the link to resource directed measures** – this is partially underway, but more needs to be done. The RHP and the Water Act seem to be convergent evolutionary processes in which the meeting point still needs to be finalized.
- iii) **The guaranteeing of financial sustainability of the RHP on the minimum requirement level** – It includes the financing of the Programme (a political issue), and even more importantly, the implementation of strategies for positive observable change. This could be done with a combination of catchment management fees and “user and polluter pays” charges. Although immediate and short-term strategies are needed to keep the RHP going, the medium and long term sustainability must also be considered.
- iv) **Establishing a link between the RHP and the 19 CMAs** - With the forthcoming set-up of the parastatal bodies (the forthcoming CMAs), it is suggested that the RHP try to get in on the ground floor of the first proto-CMA in each area (the first one will be nearby in Bronkhorstspuit as part of the DWAF cluster office). It would be important to ensure that the RHP is one of the priorities of the new bodies.
- iv) **The implementation of land care practices and river care practices at the catchment level** - an issue from Australia where it is primarily run on a voluntary basis although in this country financing through catchment management fees would be more appropriate. These fees could be implemented along the lines of the Working for Water Programme, providing jobs and at the same time addressing an environmental issue.

This suggestion would include providing remedial action such as the planting of indigenous riparian vegetation, geomorphological changes back to the natural state and diffuse pollution control through land care activities and co-operative management. One of the huge problems in this country is the silo approach to environmental management, especially when thinking of large geographical areas. We need to make a change on a nationwide scale and it will require enormous efforts in co-operative governance.

4.1.1 Questions/Discussion

- The set-up of the CMAs will be staggered, but it will be worthwhile working with them from the time they start setting up. It will probably take 10 years to roll out all the CMAs and perhaps 20 years for them all to become completely operational. This is sustainable development in the medium to long term.
- It is suggested that members of the RHP make a point of keeping their ears to the ground - and concentrate on developing personal relationships where the CMAs are concerned. In this way, it will be easier to gauge the right time to make a move.

ACTION: RHP CO-ORDINATOR and PROVINCIAL CHAMPIONS.

4.2 Mr Bonani Madikizela

Mr Madikizela asked participants to introduce themselves and give a little background information. His subsequent talk included a brief introduction and the main objectives of the symposium. He also touched on the following points:

- the future roles of Provincial Task Teams (PTTs) at the national DWAF office and the importance of budgeting for the RHP work;

- priorities of the recommendations from the February 2004 Planning workshop were discussed;
- The concern raised by the Study Team with regards to using the RHP, opposed to biomonitoring as such for licensing;

4.2.1 Questions/Discussion

- The bio-monitoring course being offered at Rhodes University in Grahamstown is currently being revised so as to address the requirements of the new legislation (i.e. resource directed measures, which includes the ecological reserve and resource quality objectives as well as new concepts, etc.). The new course content should be finalized early next year when the latest training material and ideas will be available.
- DWAF is also trying to broaden the responsibility of biomonitoring training. The new course content will be discussed with other universities as well (i.e. Venda University of Technology, etc). The training responsibility should be put in the hands of the institutions as much as possible. At the moment, biomonitoring training needs are directed to Mr Madikizela, Ms Jhupsee or Dr Espey who again approach members of the RQS to assist. It is hoped that the existing backlog of requests will be eased by getting the universities involved.
- There are new people involved in the RHP who, it is hoped, will challenge RHP's "set" ways. Active DWAF involvement in the Provincial Implementation Teams (PTTs) has been lacking for a while. Provincial teams are requested to set up provincial meetings and invite newcomers to attend.

ACTION: ALL

- Participants wishing for details of the institutional history of the RHP are invited to look at the website. Hard copies and brochures are readily available for anyone who cannot access the website.

PROVINCIAL INITIATIVES

5. FEEDBACK FROM PROVINCIAL CHAMPIONS

Shamilla Jhupsee introduced herself to the audience and stressed how much she relied on the support of everyone in the RHP in order to ensure the success of the Programme. The Provincial Champions provided feedback with regards to initiatives taking place their respective provinces.

5.1 Western Cape: Ms Toni Belcher

- The Western Cape RHP has partnerships with DWAF, City of Cape Town, CapeNature, UCT, Univ of Stellenbosch, UWC, Southern Waters and the CSIR. SANParks is also coming on board.

Organization	Contribution	Capacity
DWAF	2 staff (approx R500 000pa), R500 000 for CapeNature, R350 000 for PSPs and R100 000 pa for printing cost	RHP championship, 2 SASS/IHAS & IHI, water quality, SopR compile and design
CapeNature	2 staff and facilities for 4 contract staff	3 SASS/IHAS, 1 IHI, 1 GI, 1RVI and 2 FI
City of Cape Town	3 staff and financial contribution	3 SASS/IHAS, 1 RVI and water quality

CSIR	2 staff	SoR and other RHP products compile and design
UCT, US, UWC, Southern Waters, Freshwater Cons. Group	Mostly postgraduate student partnerships or specialist advice	SASS and RVI

- There are smaller projects with various consultants who write reports, do peer reviews, give expert advice, etc. Dr Hellen Dallas from Freshwater Consulting is assisting with SASS relevant for the different eco-regions.
- Two State of Rivers (SoR) Reports have recently been issued (at an approximate cost of R100 000 a year).
- Capacitywise, Ms Tovhowan Ndiitwani and Ms Toni Belcher mainly do SASS, IHAS and the HII and help with other indices.
- There are three staff members within Scientific Services of the City of Cape Town who help with RHP. The City has also given a financial contribution (R87 000) towards producing reports.
- Once a full SoR assessment has been done, the sites are rationalized and decisions regarding the best time to monitor are considered. The following table shows monitoring initiatives:

River	Frequency	No. of sites
Olifants/Doring	2-3 times per yr	46
Sandveld Rivers (Verlorevlei, Langvlei, Jakkalsvlei)	"	8
Berg	"	35
Cape Town Rivers (Modder to Steenbras)	"	58
Overberg Rivers (Palmiet to Salt)	"	33
Gouritz	"	35
Southern Cape Rivers (Duiwenhoks, Goukou, Hartenbos to Salt/Groot)	"	45

- The ± 50 sites of the Breede River are still to be tackled.
- The Berg River Report came out in March this year and the Cape Town SoR report came out very recently.
- The CSIR assisted in producing the Berg River SoR posters in English and Afrikaans and the Greater Cape Town posters in English and Xhosa.
- A SoR report for the Sandveld Rivers is expected at the end of this year; and the Garden Route and Underberg Rivers next year. The Gouritz River will be produced the year after that.
- A newsletter will be issued six-monthly to all stakeholders, a pdf.version of which will be put on the website.
- There is a huge interest from schools to have some kind of capacity-building media for the schoolchildren ("water" is on the school syllabus), so activity workbook has been developed.
- Work is in progress on technical reports to accompany the SoR reports.
- Mini-reports (rapid assessments) have been done by the team on stressed water resources.
- Training has been carried on within the province.
- Joint presentations have been done with the Water Catchment Forums.
- An award was presented to the RHP team by CAP – the Cape Action Plan.
- Voluntary "Friends" groups within the province are interested in assisting to improve the state of rivers.

Some of challenges include:

- Implementing the RHP across the entire province;
- Bringing provincial DEAT into the partnership.;

- Dissemination of reports; and
- Buy-in from the stakeholders and water resource managers.

5.1.1 Questions/Discussion

- In response to a question on how the Western Cape manages to mobilize so much funding and assistance, Ms Belcher said the key was the enthusiasm and support from top management within DWAF in particular. It was DWAF who had assisted in getting the contract with Cape Nature.

5.2 Eastern Cape: Ms Pumza Gasela-Lubelwana

- The indices that are being monitored as part of the Eastern Cape's RHP, include: SASS, RVI, Fish, Water Quality, IHI, Hydrology and Geomorphology.
- Besides the help that the RHP gets from RQS and from PSPs, there are trainees from DWAF also assisting.
- Partnerships include DaimlerChrysler, the Eastern Cape Health Department, Buffalo City Municipality, Border Technikon, Eskom and Fort Hare who have all contributed financially and/or towards human resources.
- Monitoring initiatives includes work on the uMthatha River and the Buffalo River. The Mbashe and Mzimvubu will be aerial surveyed during this financial year.
- The second SoR Report for the Eastern Cape (envisaged for 2006/07), will focus on the Umtata River.
- On-going challenges include budgeting and restructuring.

5.3 KwaZulu-Natal: Dr Chris Dickens

The RHP is currently not operating well in KZN – and the province is a tale of woe where RHP is concerned!

- Umgeni Water has one person qualified to do SASS but he is without leadership – so this may not survive for much longer.
- Most of the people that use to do SASS at the University of Zululand, are now employed by the CSIR or are in private consultancies.
- There is basically no institutional operation of SASS in KZN (no one in DWAF or provincial DEAT, etc.).
- KZN Wildlife, the conservation agency in the province, has no aquatic staff left. There are a couple of technicians looking after fish farms, etc. but they are not scientists and are not working on the bigger picture regarding fish in the province. The fish situation on the marine side is quite healthy, but there is nothing happening in the rivers.
- Dr Mark Graham is working on IHI and is doing biomonitoring work for SAPPI (who see a benefit for their own business purposes).
- There is currently no governmental institutional support for RHP in the province, so essentially the only work taking place is when there is biomonitoring towards particular business practices.
- Peter Goodman of KZN Wildlife contracted Umgeni Water (when Drs Dickens and Graham were still there) to survey 50 pristine sites (at Level 2 Ecoregions) in KZN for fish, riparian vegetation, invertebrates, etc.
- The Forestry industry is very happy with the products of the RHP as it gives them a tool to link into their accreditation with F.Sc, ISA and so on.

- eThekweni Municipality are also excited about the RHP and are using it to monitor rivers and streams where various developments are taking place around Durban.
- The DWAF Regional Office has very little interest in the RHP and has done nothing for at least three years. The one person who is interested does not have RHP on his job description.
- A SoR report was produced on the uMngeni River and neighbouring rivers and streams a year or so ago. There is a first meeting coming up in July with various stakeholders to discuss the Pongola River. However, there is no funding yet for this.

Some challenges include:

- Formalizing the programme and actually getting it in place;
- Increasing the demand for the RHP (training is a waste of time unless there is actually a job to do and at this stage, there is no job since no one wants the RHP within the official government structures). Until DWAF and local DEAT see the need for the RHP, there is no point in having the capacity on the ground;
- Follow-on with increased capacity building;
- Finding funding for the SoR report for the Pongola River;
- Revitalize the PTT meetings.
- RHP needs to push within the DWAF and DEAT Regional Offices and with KZN Wildlife.

5.3.1 Questions/Discussion

- What is the problem with the KZN Regional Office? Mr Madikizela said he was currently trying to rectify the situation within KZN and there will be a meeting with relevant people in the near future.

ACTION: B MADIKIZELA.

It was noted that this problem is the responsibility of the DWAF national office as well as the regional office to ensure that the RHP gets back on track in the province.

ACTION: DWAF, RQS

5.4 Free State: Mr Pierre de Villiers

Mr Pierre de Villiers said he was representing the Free State team and it was on their behalf that he is reporting:

- The southern Orange River system has good water quality and is still flowing at the moment. There is a bit of a turbidity problem with the Caledon River. These rivers are artificially managed, there are many dams which cause artificial flows.
- The Riet and the Modder Rivers, Sand-Vet and the Renoster Rivers which are quite small also have various dams built on them and during dry periods there is no flow downstream from these dams.
- The Wilge River has good water quality but is fairly altered due to water transferred from Lesotho. So there are very high flows which never use to occur.
- Mountain streams near Harrismith and Qwa Qwa can be summed up as being non-perennial rivers (which flow only when there is rain).
- Backflow effluent from the municipalities, mining and agricultural, cause some of the rivers to flow in the winter (when there is no rain).
- Of late there have been major capacity problems with sewage from local municipalities. Raw sewage is discharged into some of the rivers which severely impacts these river.
- There is commitment from the MECs that they will train and assist with funding to improve the general chaos.

- DTEEA is busy with eco-tourism based around rivers in the area. There is yellowfish conservation and fly fishing taking place.
- The Vaal River is brown due to pig farming and to Parys's raw sewerage. The river has dangerously high Ecoli counts which threaten to become worse.
- The team is trying to create awareness with the public and to make a change.
- A Riparian Vegetation Index for the Free State has been completed in association with the HII.
- An activity book has been produced (with an enormous effort by Ms Gerda Venter).
- The team flew the Kraai and the Klip Rivers this year.
- The ecological integrity studies haven't yet been completed. Buy-in from the university and other sponsors are being investigated.
- The False, Caledon, upper Orange and Renoster Rivers have been completed. They have been flown and videoed and the consultants have actually put the final picture together.
- DWAF and DEAT have together organized various awareness days and informed the general public on water issues.
- Situation analysis: the Moder/Riet and some of the other smaller rivers have been sampled by the University and sponsored by Bloem Water.
- Sedibeng and Rand Water appear to have a capacity problem. Five people have been trained for Sedibeng and have since left the RHP. From Rand Water there is commitment from some of their managers but it has to come from the senior level.

Things still to be done:

- Sort out the sewerage works;
- Produce a toxic algae pamphlet;
- Finalise a wetland policy (there is now a Wetland Forum attached to the RHP);
- An awareness initiative covering life associated with rivers;

Mr de Villiers said he was impressed how the Northern Cape and the Free State teams are working together and communicating well. There is a possibility of producing a poster between the two provinces.

5.5 North West: Mr Sandile Mpambani

In Ms Tharina Boshoff's absence, Mr Mpambani gave a brief report from the North West Province:

- The RHP initially started in 1999 in North West, however, when key people left the Department, implementation efforts stopped for a while. RHP work was effectively recommenced in 2003/04 when there were renewed efforts to revive the programme with funding from NORAD and assistance from DWAF.
- The RHP has been added to DWAF's Strategic Plan for the province with most of the funding for RHP initiatives currently coming from DWAF and some from NORAD.
- Four catchment areas within the province are being monitored:
 - Crocodile West / Marico (upper, middle and lower) – is being monitored 3 times a year (on a two-year cycle);
 - Molopo –currently being monitored (2- or 3-year cycle);
 - Marico Rivers – currently being monitored (2- or 3-year cycle);
 - Upper Vaal – will be monitored in October 2005 (2- or 3-year cycle);
- Aerial surveys are planned for the Crocodile, Marico and upper Vaal catchments.
- In terms of SoR reporting, the Crocodile West/Marico report was published in March 2005.
- The North West, Gauteng and Limpopo provinces will launch the Crocodile (west) Marico SoR report at the end of July this year.

- Current capacity:
 - Habitat, fish and invertebrates are being monitored by specialists of DWAF;
 - Fish will eventually be monitored by a person currently in training with the Department (DEAT);
 - Riparian vegetation monitoring will be outsourced;
 - Water quality is being monitored by DACET (with a lot of help from DWAF);
 - Diatoms are being monitored by specialists of the North West University who developed the diatom index.
- Partnerships include North West DACEL, North West University, DWAF, NORAD and some mining companies who are willing to share data with the RHP. The identification of other stakeholders in the four catchment areas is ongoing.

Some challenges include:

- Time constraints – due to the fact that there are many other provincial monitoring programmes.
- Identification of other stakeholders in other water management areas.
- To set up a good monitoring system within the province which will include the Rivers database, communication forums, etc?

5.6 Limpopo – Mr Paul Fouchè

- Mr Fouchè informed the meeting that Mr Mick Angliss, the Limpopo Provincial Champion, sustained a tragic accident in May this year, and although he is now out of intensive care, his health problems will be ongoing. The meeting asked Mr Fouchè to forward their good wishes to Mr Angliss.
- The RHP started in Limpopo in 1997 and was followed by a workshop of all relevant role players in the province. The local MEC subsequently gave the programme his support.
- Stakeholders in the province include the Kruger National Park, Universities of Venda and Limpopo and DEDET.
- The provincial teams have become proficient in numerous biomonitoring indices:

Full name of index	Recommended survey period
Fish Assemblage Integrity Index (FAII), Fish Response Assessment Index (FRAI)	1-2 times per year
South African Scoring System (version 5) (SASS5)	2 – 4 times per year
Riparian Vegetation Index (RVI)	Once a year
Geomorphological Index (GI)	Once every 2 – 5 years
Index of Habitat Integrity (IHI)	Once every 2 – 5 years
Water Quality (WQ)	Unspecified
Diatom Index (in development)	To be advised
Habitat Assessment Systems	
Habitat Quality Index (HQI)	Each site visit
Invertebrate Habitat Assessment System (IHAS)	Each site visit

- Outstanding support has been received from DWAF, RQS with the sharing of data throughout. DWAF has been actively involved in the development of new activities.
- Unfortunately, there has been very little input from provincial DWAF offices.
- DEDET views the process as important in terms of the State of Environment Reporting.

Monitoring			
River	Frequency		Number of sites
	First monitor	Follow up monitoring	
Crocodile	1998-1999		
Sabie	1998-1999		
Olifants	1998-1999	2002, 2004 (third comparison)	34
Levuvhu	1999-2000	2003 (selected sites)	43
Letaba	1999-2000	2003 (selected sites)	36
Sand	1998-1999	2001	14
Mokolo	2002		31
Crocodile and Marico	2004		20
Phalala	2005		11

- There is now a dedicated botanist in the Department of Environmental Affairs – for the first time in many years – who helps with the vegetation aspect of the RHP.
- Limpopo RHP products include:
 - First SoR report on the Crocodile, Sabie and Olifants Rivers issued in 1998/99.
 - Second SoR report addressed the Letaba and Luvuvhu Rivers issued in 1999-2000.
 - Technical report on the Sand River, 2001.
 - Technical and site inventory report and poster on the Mogol River Catchment, 2002.
 - Letaba and Luvuvhu were re-monitored in 2003 followed by a technical report.
 - Technical and site inventory report (and SoR report pending) on the Crocodile and Marico Rivers, 2004.
 - Technical report on the Olifants River Catchment, 2004.
 - Phalala Catchment was monitored in 2005 and the report is in preparation.
 - All the survey data is on the Rivers Database and on the DEDET systems.
 - There is also a full photographic library, a number of *ad hoc* site survey, historical data sets and reference collections.
- The University of Venda now offers technical certification and diploma qualifications – which could help to address future RHP training needs.

Some challenges include:

- Formal communication routes are missing between the various water liaison committees and a lack of feedback from senior management.
- New DWAF programmes (such as the National RHP) cannot be followed by DEDET unless strategic objectives are discussed and agreed upon at the highest level.
- Staff are limited and the position of “Provincial Champion” is by no means certain.
- Return period for follow-up monitoring is totally unacceptable.
- DWAF must accept responsibility for the SoR reports.
- There is currently very limited institutional memory in respect of skills in the province.

5.6.1 Questions/Discussion

- Mr Fouché confirmed that technical reports have been issued for most of the rivers that have been re-visited. However, finding the reports that Mr Angliss worked on is proving a problem.
- Noted that the Limpopo Team has been responsible for biomonitoring of the Olifants River in Limpopo only (and not been involved with the river in the Mpumalanga and Gauteng provinces).

5.7 Gauteng : Mr Piet Muller

- From an administrative point of view, the RHP has been taken on by GDACE and has a full biomonitoring programme called the Gauteng River Health Programme. It has a business plan and an annual budget and falls within the aquatic services component under Technological Services. There is a team, equipment and a programme – so the RHP in the province is on track!

70 biomonitoring sites have been identified in Gauteng		No of sites
<u>Crocodile (west) Marico</u> (Pienaars, Apies, Hennops, Juskei, Crocodile, Klein Krokodil, Bloubankspruit Magalies and Skeerpoort Rivers)		47
<u>Upper Olifants</u> (Elands, Wilge and Bronkhorstspuit Rivers)		15
<u>Upper Vaal</u> (Suikerbos, Blesbok, Rietspruit, Klip Rivers) - and an additional 14 sites which are being monitored by consultants on a permanent basis for the local councils		8 (14)

- In terms of the SoR reporting:
 - the “Ecological State of Southern Gauteng Rivers” (Upper Vaal section and southern flowing rivers) was published in March 2003 with the help of the CSIR.
 - SoR: “Monitoring and Managing the Ecological State of Rivers in the Crocodile (west) Marico Water Management Area” (March 2005), a collaborative effort between Gauteng, North West and Limpopo province will officially be launched at the end of July.
 - A poster on the “Ecological State of Gauteng Rivers” will include the rivers of the whole province. It will become the baseline report-back for the province and will be upgraded every two years.
- Partnerships include:
 - GDACE (environment / EIA process)
 - DWAF, RQS (scientific support / biomonitoring)
 - Local councils (management and implementation)
 - Johannesburg University (scientific support / fish)
 - Tshwane University of Technology (technical support / biomonitoring and training)
 - Provincial RHP champions (collaboration ITO biomonitoring reporting and catchment management)
 - River forums and NGOs (implementation and biomonitoring)

Some challenges include:

- Prevention of further irresponsible degradation of aquatic ecosystems in the catchments.
- Restoration of some of the ecological processes in the rivers and wetlands in the catchments.
- Driving awareness campaigns in terms of the importance of aquatic ecosystems functioning – a paradigm shift needed in the attitude of everyone towards the use/abuse of aquatic ecosystems and the association processes.
- To conserve what is left, i.e. of the Skeerpoort River (EIA process). The Skeerpoort runs through a World Heritage Site.
- Implementation of the Gauteng C-Plan (protection of flood zones and riverine areas, irreplaceable sites).
- Restoration of urban drainage systems in terms of “artificial” flood retention, surface stormwater management.

- Awareness campaigns – to inform the decision-makers and managers of their duties towards the conservation and management of aquatic ecosystems in terms of all the relevant legislation.

5.8 Northern Cape: Mr Ramogale Sekwele

Mr Sekwele said he was reporting on behalf of the Northern Cape PTT

- The province includes the lower Vaal and the lower Orange management areas, the Harts River **(to be checked, could not hear?)**
- Active role players in the province include:
 - DWAF regional office (2 people with knowledge of water quality);
 - DTEC provincial office (2 people: 1 with SASS / fish knowledge and 1 technical staff member);
 - Free State Team (gives incredible support);
 - McGregor Museum (a botanist would like to help with the Vegetation Index but there is no funding);
 - None of the people are accredited. The Northern Cape suffers from very limited capacities of both experts and resources.;
- Logistic capacity:
 - Physico-chemical meters have been acquired, as well as SASS and fish sampling materials, field guides and safety clothes.
 - Water analysis is undertaken by TSI.
 - SASS net, fish scooper nets and field guides still to be acquired.
- Initiatives started late in 2003 after an aquatic scientist's post was filled by DTEC and the subsequent filling of an AD post by DWAF in January 2004; then after the relevant material was acquired the first field survey could be undertaken.
- The first SASS survey was conducted in October/November 2004, followed by one in March/April 2005.
- Fish sampling was conducted at only two of the 22 sites currently covered.
- There is a chance of a possible extension to Christiana in the Vaal River and Oorlogskloof in the Olifants/Doring system.
- No SoR reports have yet been produced. Invertebrate monitoring are well covered and Rob Palmer completed an invertebrate study a few years ago (WRC Report No. KV 130/00).
- There is a plan to develop an RHP poster in the not too distant future.

Challenges include:

- Limited skills, capacity and support.
- Little or no flow in the Harts River.
- Problems with accessibility due to volumes in certain rivers.
- Impacts due to hydropower generation and water demand for agriculture – Orange River.
- Algal blooms affecting dominance of invertebrates based on their feeding category.

5.8.1 Questions/Discussion

Equipment: In the past a simple request to RQS was all that was required to get SASS net..

5.9 General questions/discussion on Day 1

- **Orange/Vaal Catchment** – Concern was expressed that 10 years after the RHP came into being, there is still no SoR report on the Orange – South Africa's biggest river.
 - The Orange/Vaal is one of the biggest catchment areas in southern Africa, but has only been looked at in bits and pieces, thus proving difficult to market the whole product. Someone needs to take the lead in promoting work on this. Perhaps there is a potential for funding from the WWF and Lisa Padfield could be approached in this regard?
 - It was noted that a meeting had been held regarding the Trans-Boundary parks (Richtersveldt area) where it was obvious that there are major problems with the whole of the Orange River. It was also mentioned that there was a lower Orange River study done in the past but the report subsequently vanished.

Wetlands - Are we looking at some generic process to sample wetlands on an annual basis?

- Mr Madikizela informed the meeting that a wetlands initiative is underway. The RQS (Ms Jhupsee) is in the process of drawing up a ToR for a project in this regard.

5.10 Summing up the day's proceedings

Dr Roux said that it has been interesting to note throughout the champions' reports, how some provinces have become independent (i.e. Western Cape, Free State, Gauteng) with a strong internal momentum and multi partnerships. This state of affairs has evolved over a comparatively short period of time. There are also interesting inter-plays between areas where there is reduced capacity and areas where there is new growth. So many of the PTTs are now reaching a point of independence.

The Free State is to be particularly congratulated on their innovation!

Dr Dickens commented that 5 – 10 years ago, work on the RHP was on a more voluntary basis with more voluntary collaboration. However, in KZN, work was not sustainable on a voluntary basis and perhaps it was a mistake that government institutions were not pushed to develop their own capacity.

In summing up, Dr Espey said that:

- i. Ideally for RHP purposes, there should be regular SoR reports every two years in each of the 19 catchment management areas. Unfortunately, at the moment, SoR reports seem to be sporadic and inconsistent and the absence of a report for the Orange River is a major omission.
- ii. In the long term a more structured management approach in some of the provinces is needed. Environmental economics needs to be used to convince people and thus lever political willpower where it is needed. To this end, it is necessary to produce a study which works out: the value of the environmental services that the catchments are producing - the value of the economy they are supporting - and the value of the social services they support.
- iii. In the interim, the best case examples that have come up in some of the provinces need to be replicated in the other provinces and there needs to be a slightly more structured approach on a Catchment Management Agency basis – instead of on a provincial basis. Although there was a lot of excellence from the champions' reports, much of the work is patchy and very fragile! Those champions, who have played a large role in catalyzing good things, need to have a critical mass to create sustainability for the second phase of the programme.

- iv. There are issues that have been noticeably left out of the reports: i.e. issues around wetlands, estuaries and trans-national catchments in particular. Sixty percent of the surface area of South Africa is shared with catchments over the borders into seven different countries. These trans-national catchments should be looked upon as one unit in terms of the ecosystem approach and geo-politically.
- v. Ongoing funding is a problem and there must be more effort to make the most of available resources (in the current policy vacuum) until the third phase of “national ownership” of the programme, where the user pays through catchment management fees. This approach will help financially sustainability.

What the RHP has achieved to date has been optimal under the circumstances.

DAY 2: Wednesday, 22nd June

NATIONAL INITIATIVES

Ms Sharmilla Jhupsee welcomed everyone to the second day of the symposium.

6. NATIONAL COVERAGE PHASE

6.1 Inception phase – progress to date: Ms Liesl Hill

Ms Liesl Hill started by giving some background information on the RHP: provided background information regarding the inception phase, one of the projects currently running as part of the National Coverage phase of the Programme. She started by giving progress on the RHP since its initiation:

- The RHP was initiated in 1994 in respect to a need for information on the state of aquatic ecosystems. DWAF's management focus shifted towards an integrated ecosystem approach and the monitoring needs concentrated more on the overall response of the environment to natural and anthropogenic stressors.
- The Framework Design Phase started in 1995 when the objectives, scope and technical specifications of the programme were determined. The Conceptual Design Phase followed in 1996 when the protocols for the classification system, monitoring, site selection and indices were addressed. The Pilot Testing and Implementation Phase followed after that (1997-99) during which the various protocols were tested; during this time a model for provincial implementation of the programme was developed. The Anchoring Phase (2000 – 03) saw quality assurance and the reporting procedures for river health, also the implementation of the programme at both provincial and local levels. The National Coverage Phase (2003 -) is currently running. The vision of this phase is:

That information generated through the Programme's river surveys and State-of-Rivers reports will eventually cover all the main rivers of South African order to allow a high-confidence statement of the overall health of the nation's rivers

- A successful Planning Workshop was held in 2004 identified the following outcomes:
 - to improve quality assurance and control procedures;
 - to refine the Rivers Database;
 - to revise the biomonitoring short course; and
 - to develop an index for riparian vegetation.

- Projects of the National Coverage Phase include: Inception Phase (PSP: CSIR), Priority Components Project (PSPs: CES, INR; The Freshwater Consultancy Group) and the establishment of a Vegetation Response Assessment Index (VEGRAI). The latter forms part of a WRC solicited project.
- Re the Inception Phase – the overall purpose is to review the design of the RHP and to align it with the requirements of the National Water Act (NWA). The programme will be hitherto referred to as the National Aquatic Ecosystem Health Monitoring Programme to make the direct link to the NWA (Chapter 14).
- The inception Phase started in July last year and will be completed at the end of March 2007.
- The review of the design of the national RHP is structured around the three core function of monitoring, namely:
 - data acquisition
 - data management and storage; and
 - information generation and dissemination
- Step 1: Information generation and dissemination (revisits the information needs of the primary stakeholders (stakeholder workshop).
- Step 2: Data acquisition (there was a network design workshop followed by a series of workshops on macro site selection).
- 600 sites were proposed as national sites – thus more or less 32 sites per water management area. However, in most instances there are more than 32 sites and there is now a secondary process. Dr Helen Dallas of the Freshwater Consulting Group is ultimately responsible for the selection task and by the end of September will have compiled an inventory of the sites. The site inventory will be sent to everyone in the provinces who was involved with the workshops and to the various managers. The sites will then need prioritizing for monitoring.
- The two main outputs of the Inception Phase are: a revised design for the Programme; and secondly, an operational manual produced by March 2007.

6.1.1 Questions/Discussion

- Dr Espey said that he would like the 600 sites (32 per water management area) selected so as to fulfill the obligations towards the Water Act. If that is the case, monitoring them would become a national responsibility and would therefore be done by DWAF. There would probably be significant overlap with existing sites monitored at provincial level as well, so there would be a potential two-way benefit. If the existing teams carry on with the work where would the funding come from? The resulting data could be used for many different purposes.
- As part of the Macro Site selection process, a comprehensive list of all sites currently monitored are available – not all the sites are however captured in the Rivers Database and it was suggested that this be done, together with the national sites.

ACTION: HELEN DALLAS

- The question was raised regarding who makes the decision as to what should go onto the Rivers Database? Different data would be relevant for different needs - and the data entered would not necessarily be relevant to an impact assessment. Hopefully, the Water Management System will one day cover *all* the information as the eventual aim would be to get the Rivers Database into the WMS.
- The 600 official sites minimally needed for the country will be funded through DWAF. However, for a little extra effort there will be additional work collected for other activities - which could also prove valuable. So, is it possible to define exactly what extra information should be collected the first time the teams are on site? It would also be useful to then boost the number of sites to 1 200 across the country from the beginning [???]. The CMAs and the provincial conversation people would probably also have specific sites they would like to add.

- Dr Espey said that it is important to establish the principle of *why* information is being collected? Will the initial 600 sites answer the requirements of the Water Act? If so, what could the extra sites provide over and above the minimal requirements of the Act – and which parties require the extra sites, for what purpose?
- It was confirmed that a comprehensive map will be produced showing the various sites and marking the 19 catchment areas and indicating any overlap with provincial boundaries. Such a map could also be drawn up so that to click on a specific site could indicate:
 - who is responsible for monitoring that site
 - what specifically is being monitored
 - the dates and frequency of monitoring, etc. etc

6.2 Priority Components Project - Quality Assurance and Control: Dr Chris Dickens

Dr Dickens introduced the two-year project which commences this month, June 2005. The first part of the project looks at quality control and assurance issues (done by Dr Mark Graham and himself); the second part covers data storage and management (done by Dr Helen Dallas) and the third part is a one-year revision of the biomonitoring course (by Dr Patsy Scherman).

Quality control and assurance - A workshop will be held in August this year and will include:

- i. Clarify and standardize SASS5 certification (accreditation).
- ii. Appoint and accredit all Provincial Certification Officers; these will be people based in the provinces. They will be the official custodians of issuing accreditation to local practitioners.
- iii. There will be a National Certification Officer who will be a DWAF employee. This person will specifically be the accreditation officer for SASS and will be in charge of the Provincial Accreditation Officers.
- iv. Develop procedures for the certification (accreditation) of FAIL and IHI practitioners. This will probably only take place towards the end of the two years and will follow the same procedure as for the SASS certification.

ACTION: DRS DICKENS AND GRAHAM

- Noted that, in due course, all SASS / biomonitoring tenders will require certification (which will probably not please the consultants!). However, the standardization and accreditation procedure is very necessary if standards are going to be maintained.
- An aspect of the project will look at the reporting of results from SASS, FAIL and IHI – ensuring there is an indication of how accurate the results are.
- There needs to be a look at all minimum standards for all River Health Programme methods. Methods must be proven, tested and produce accurate results which must be repeatable. A guideline will be drawn up that will regulate all current and future methods towards producing reliable results.
- Protocol for data handling, entry into the Rivers Database, etc.
- A manual will be produced for all the quality aspects of the RHP methods.
- Together with DWAF, an effort will be made to encourage all regulatory authorities to start using RHP data in their business practices, i.e. for issuing of DWAF or DEAT tenders, etc. (so that tenders actually state that information must be used in conjunction with RHP and that only accredited practitioners must be used, etc.)

Data storage and management

- The Rivers Database (developed by Dr Dallas and others over the last few years) – is a wonderful tool but has a few teething problems and is difficult to use at this stage. More 'smoothing' and finalization needs to be done.

- Sourcing and capture of all existing RHP type data on the Rivers Database, including the importing of existing databases (including one-off SASS sheets, the big DWAF database, etc) and capturing of results.
- Review current data integrity checker (a system whereby incorrect data will automatically be spat out...!)
- Linkage and ultimate merging with the WMS (the mega computer system being developed by DWAF). Linkages need to be absolutely seamless.
- Dr Dallas will do an audit of all current problems existing with the Rivers Database, then do all the software changes to advance and repair the Database and make it more user-friendly and reliable.
- The input and output of data to be re-designed for latest trends in data capture (data-loggers, laptops, etc).
- Some aspects that were previously incorporated into the Rivers Database may need to be re-assessed.
- Key users in the province will be identified.
- Offering training in the different regions. At this stage it is planned that there will be 2 days in Pretoria, Pietermaritzburg and Cape Town (+ 1 other in due course). There will be follow-up, possibly on a one-on-one basis, where necessary.

Revision of the biomonitoring course

- The course has primarily been run out of Grahamstown. It needs noting that course participants do not get a SASS accreditation at the end of it! The course must meet the following requirements:
 - requirements for monitoring data collection, curation and reporting;
 - provide links between biological monitoring, the Reserve and licensing;
 - the role of biological monitoring methods in Ecological Water Requirement (EWR, ie. the Reserve) studies;
 - requirements for compliance monitoring in terms of licensing.
 - review other biomonitoring and Reserve training courses currently available.
 - develop links with training tools currently available, eg FETwater, university courses;
 - ensure there is capacity building, i.e. training of biomonitoring teams, including staff of DWAF and DEAT regional offices;
 - consult regarding registration / accreditation requirements of the course;
 - link to accredited courses run from tertiary education institutions.
- The revision will be done together with stakeholders and will compile a brief of the minimum course requirements. The course will be designed (detailing the outline with guidelines for the content of the course and skills of the lecturer for each component of the course), source information on pricing of courses, best location, etc, design a process for course evaluation and finally, produce a DVD of each field method.

Dr Mark Graham said the certificates are nearly finalized. There has been a problem getting protocol approved for having two different Government departments (DEAT and DWAF) on one certificate! Finalized certificates will be distributed to the provinces within the next month or so.

6.2.1 Questions/discussion

- Data that is not collected by an accredited person may still be valuable data - but it needs to be known that the data may be suspect as the collector was not officially accredited. The accreditation process followed up to now will probably still be okay, changes made will probably be minor.
- What is the possibility of getting SAQA (South African Qualification Authority) accreditation for the biomonitoring course - the implication is that whoever funds the course could claim a refund as it would be a Skills Development? Such accreditation would help to obtain

necessary funding. (Liesl if I was there this would have been the answer “ The intention is not to accredit a short course of 1-week i.e. Biomonitoring, but incorporate it as a module or similar level, to University curricular (who are willing), such as Rhodes, Venda, etc. In this way we avoid SAQA pre-requisite. The certificate of attendance will be issued if we continue with the old training approach. No one can be accredited for SASS in 1-week” A person must go and do extensive practise in sampling following the 1-week course, then apply for a practical test which has accreditation already (Mark Graham can comment on the correctness of SASS accreditation)

- This possibility is on the agenda and Patsy Scherman will investigate whether it is worthwhile or not. There may not be sufficient people in the country trained in biomonitoring to warrant it. Getting accreditation approved is often lengthy and complex. There have been some really dodgy consultants in the field of environmental affairs and things are now being tightened up – more and more tenders are now insisting on relevant accreditation by suppliers.
ACTION: DR SHERMAN
- One of Dr Scherman’s first jobs will be to consult with all the provincial champions and others attending this symposium to ask what everyone would like to see included in the course.
ACTION: DR SHERMAN
- The Rivers Database must make adequate provision for capturing all kinds of information – If information is not able to be captured, there is a possibility of it being lost forever, since knowledge would be lost when the person responsible leaves their present employment. This is a weakness of databases.
- Dr Graham made the point that RHP must not be apologetic if 50% of people fail the SASS accreditation test. It is a tricky test and if people are unable to produce reliable results – they shouldn’t be trusted to do SASS work. Common mistakes, anomalies and misinterpretations have been picked up from various provinces in the past – these have now been summarized and standardized and will be used to better the SASS procedure in future.

7. STATE OF RIVERS (SoR) REPORTING

7.1 Questions/discussion

- Referring to a SoR report on the Cape Town Rivers, Ms Toni Belcher said there was concern about the open rivers and water quality in Cape Town. However, there is a difference between a river that is still functioning ecologically to one that is dead (thus a SASS score of 40 compared to 10). Although both rivers may be poor, there is still a significant difference since one still functions ecologically. More and more of these urban rivers are sliding from “poor” to “very poor” or “unacceptable” and it would be nice to be able to reflect this as a trend in future SoR reports. There should be more of an effort at positively managing rivers in a poor state for a certain period of time to ensure they do not get worse and to try and improve them. Local authorities are not keeping up with their infrastructure.

Dr Roux responded by saying that most of the indices were developed for natural ecosystems– rivers in an urban area are often canalised and modified to such an extent that it cannot be regarded as natural systems.

Many urban rivers have been canalized and are thus in an artificial state, there is no hope of rehabilitating them to a functioning ecosystem. Although, many of the Cape Town rivers have not been canalized yet and are still functioning with a riparian habitat – however, they may have quality problems which could lead to loss of lives.

Dr Neels Kleynhans suggested going back to the A – F categories that were initially developed out of the flow requirements (A = natural, B = largely naturally, C = moderately modified, D = largely modified, E = seriously modified, F = critically modified). We still use this categorization in a lot of technical estimations as we need the resolution. Dr Roux said that although he has pushed for a simple communication tool he agreed that it is important not to lose high resolution assessment. For the audiences that RHP wants to reach there is a lot to be said for the simple classifications: Natural / Good / Fair / Poor – and there is now a proposed Water Resource Classification System in the National Water Resource Strategy which relates to these four classes but with different terminology. It is, however, still a proposed classification.

A potential dilemma is that the proposed classification does not allow for a classification that is “not an acceptable state” and so many of the rivers are in exactly this state. So what can be done about this?

The general approach with the A – F categories is that a river should not fall below a D. Anything below a D is undesirable. Dr Mark Graham said he would be nervous about changing categorizations, in terms of communicating it to municipal authorities, if the picture is confounded; a lot of re-education would be necessary and may push back the programme. Perhaps the RHP can give the authorities an opinion – but the actual management is another issue completely.

ACTION: RQS

- Dr Kleynhans suggested that scientists are not supposed to prescribe how things should be but should only be presenting the facts to help others take decisions. Dr Espey said he did not agree with this theory, he felt the scientific community needs to become more socially responsible. RHP personnel should try to push an agenda of social responsibility when talking to people, or presenting a report.
- Mr Piet Muller said he often gets asked “what is fair”? There is no existing definition stating what one needs to do to make a river “fair”. The meeting agreed that definitions are sorely needed. **AGREED.**
- Dr Espey said that he thinks the SoR reports should certainly aim to provide some guidance towards management solutions – despite the fact that the RHP is a monitoring programme – suggesting management solutions should be an obvious next step. **AGREED.** It was pointed out that a lot of the tools exist in the RDM procedures.
- Dr Roux commented that there are no national guidelines or explicit vision in the country that lays down a certain number of rivers that should be in a natural state – and so many should be in a fair state. As things stand at the moment, all rivers could be allowed to degenerate to a “fair” state.

7.2 Desired state of river: Dr Neels Kleynhans

In referring to the A – F classification, Dr Kleynhans confirmed that no river should be managed below a D class (poor). He mentioned that an Ecological Importance Sensitivity Assessment was developed several years ago for the mainstems of the approximately 2 000 quarternary catchments in the country (the tributaries were not considered at all due to the immensity of the task). We looked at biodiversity issues (i.e. rare species) and habitat. This provided an overall broad indication of how ecologically important the particular river delineation would be and is also based on certain characteristics around habitat (i.e. a drop in flow and some broad water quality issues). This was done to address a lack of knowledge on the biota in many rivers. Biodiversity must be considered as

it is a vitally important aspect of the sustainability of the system. A project will be initiated soon to review the current EIS assessments that will include tributaries.

Dr Espey said that his personal view is that South African rivers are in such a bad state that there should never be an official acknowledgement that one should allow the dropping of classifications. We should be saying we will leave the quality where it is, or improve it. No river should be allowed to drop and the present resource quality of the river should always be maintained or improved. The RHP needs to be innovative to come up with solutions that leave everyone happy.

8. REFERENCE SITES vs. REFERENCE CONDITIONS: Dr Chris Dickens

Dr Chris Dickens stressed the importance of having a benchmark river against which other rivers can be compared to. A really good river needs to be quantified – a reference condition needs developing – a hypothetical reference site/condition needs to be developed. So one refers back to historical data and develops an ideal state on paper. By dividing the country up into ecoregions theoretically, two sites within the same ecoregion should look the same and have the same basic biota, etc. So reference conditions need to be closely tied to ecoregions and they may or may not exist (i.e. be hypothetical constructs). The reference conditions have to be related to the size of the river. Dr Dickens said he thought reference conditions are absolutely imperative and the RHP probably needs to give it more attention!

Are the reference conditions in the main ecoregions another responsibility, in addition to the 600 biomonitoring sites, that the RHP should be looking at?

The reference site situation, especially where fish are concerned, is very problematic. Not only because a river may have been disturbed but because a single site doesn't represent all the fish species that are found in a particular reach of a river. River reference conditions are essential for the biota, the fish, invertebrates, habitat conditions and to the riparian vegetation.

Perhaps Dr Helen Dallas should be adding reference conditions onto the Rivers Database?

ACTION: MR MADIKIZELA AND DR DALLAS

Dr Dickens asked what if there are no potential reference sites in an eco-region? The RHP perhaps should then take the step of identifying a specific reference conditions. Dr Roux said he thought it would be incredibly valuable as a national asset to have a reference condition described for each of the ecoregions.

Dr Graham referred to the Diatom Project and confirmed that data collections go back historically a long time. A locatable reference site would be first prize! Second prize would be reconstructing what should be at the site.

Perhaps results could be measured by deviation from natural, so instead of saying something is a C-class, one would say it is 20% from natural. Intuitively this might be more meaningful to a manager.

It was AGREED that reference sites and conditions are a priority issue and the meeting asked that this be one of the official recommendations. Ms Liesl Hill and Ms Sharmilla Jhupsee were asked to look into the matter further and possibly establish terms of reference to look at the national responsibility.

ACTION: MS JHUPSEE & MS HILL

A suggestion was then subsequently made that only the national sampling sites could be considered at this stage, which excludes national reference sites/conditions.

9. ACHIEVEMENTS OF THE RHP – TEN YEAR REPORT: Ms Wilma Strydom

- A forthcoming report entitled “*Achievements of the River Health Programme 1994 – 2004 : a national perspective on the ecological health of selected South African rivers*” is intended as a summary covering the achievements of the RHP over the past 10 years and to give recognition to people involved with the programme at the beginning. The report also links the RHP with other initiatives and the Programme’s strengths and weaknesses need to be identified.
- The target audience of the proposed report includes the minister, politicians, senior management of DWAF, participating stakeholders and the general public.
- The content of the report will cover an introduction and background, legislation and other initiatives, indices and categories, SoR reporting in SA, drivers of change, management actions, challenges and opportunities and contact details.
- Indices and categories section – explains the river health indices and classification system and includes a section on quality assurance.
- In terms of SoR reporting, a SoR timeline will be added as well as a summary and overview of the SoR reports produced to date. Care will be taken not to duplicate existing reports. Although the graphs in this section are intended to convey the state of the rivers at a quick glance, all the provinces have not used the same indices, so these graphs will be difficult to set up for comparison. Perhaps we must go back to all previous reports and convert all results to an overall EcoStatus assessment. This will be an opportunity to bring all previous reports up to the same level for comparison of results.

Further ideas for the report:

- Where products have actually been incorporated into other products, e.g. the forestry industry have adopted the format to the methodology for their SoR report and some of the bigger Metros have essentially also picked up these tools and are using them for their SoR report.
- The report must set an example for co-operation across sectors.
- A map of the catchment management areas could be included. It was suggested that a map showing where monitoring is currently taking place also be added. Ms Strydom noted that maps generally are proving a problem since none of the maps compiled for the SoR reports to date are standardized, so new maps need to be compiled.
- Everyone at the meeting is urged to complete the questionnaires sent out by Estie Eloff and add what is happening in the various provinces.
- The purpose of this report is to further inform the general public of the current state of rivers in the country (and not just to provide information to the scientific community)..
- Include the fact that the RHP (through its SoR reports) provides an input into State of the Environment Reporting (the DEAT initiative).
- The fact that the RHP has contributed to general rivers awareness and popularized taxonomy..
- It would be good to get DEAT somehow involved in the report (and not just DWAF).
- The total economic value of rivers needs adding and highlighting – perhaps there could be a pilot study of one river with all the available information? This would be relevant when

explaining to a local authority WHY they cannot develop an area for instance. At the moment many people cannot understand when it is said that a river is “valuable”.

- This would be an ideal opportunity to invite all the relevant national and provincial ministers and MECs to formally launch the report and thus obtain their ‘buy-in’ to the RHP. Details of a “road show” also need to be discussed.
- Ms Strydom asked that completed questionnaires – as well as any other suggestions or recommendations for the report, be e-mailed to herself or to Liesl Hill as soon as possible.

10. RESEARCH AND DEVELOPMENT INITIATIVES

10.1 A framework for determination and monitoring of river health and the ecological reserve: Dr Neels Kleynhans

- Dr Kleynhans summed up his presentation by saying that it basically addresses: “in what condition is the river and where did it go wrong”? .
- EcoClassification refers to the determination and categorization of the Present Ecological State (PES: health or integrity) of various biophysical attributes of rivers compared to the natural/close to natural, reference condition. The purpose of EcoClassification is to gain insights into the causes and sources or the deviation of the PES of biophysical attributes from the reference conditions. Ecological evaluation in terms of expected reference conditions, followed by integration of these components, represents the *Ecological Status or EcoStatus of a River*
- EcoStatus Definition: “totality of the features and characteristics of the river and its riparian areas that bear upon its ability to support an appropriate natural flora and fauna and its capacity to provide a variety of goods and services” (Iversen et al 2000).
- A river will have a natural/close to natural ecostatus when three important things are close to natural:
 - i) Hydro-morphology – geomorphology and hydrology:
 - The quality and dynamics of flow reflect almost undisturbed conditions.
 - The continuity of the river allows undisturbed migration of aquatic organisms and sediment transport.
 - Channel patterns, width and depth variations, flow velocities, substrate conditions and both the structure and condition of the riparian zones correspond almost to undisturbed conditions.
 - ii) Water quality :
 - The values of the physico-chemical elements correspond almost to undisturbed conditions.
 - Nutrient concentrations remain within the range normally associated with undisturbed conditions.
 - Levels of salinity, pH, oxygen balance, acid neutralizing capacity and temperature remain within the range normally associated with almost undisturbed conditions.
 - Synthetic and non-synthetic pollutants are close to zero.
 - iii) Biology: The taxonomic composition and abundance of the: riparian vegetation, phytoplankton, macrophytes, invertebrates and fish correspond nearly totally to the undisturbed conditions.
- Ecosystem health or status – If the following are present the system would be healthy:
 - Homostatis
 - Absence of disease
 - Diversity or complexity
 - Stability or resilience
 - Vigour or scope for growth
 - Balance between system components

- Shaeffer's sequence for ecosystem health assessment is also useful:
 - Identify symptoms
 - Identify and measure signs
 - Make provisional diagnosis
 - Conduct tests to verify the diagnosis
 - Make a prognosis
 - Prescribe treatment
- Ecostatus assessment
 - The principle of EcoStatus assessment and interpretation is based on the concept of stressors – risk – endpoints.
 - Endpoints refer to the ecological endpoints specifically.
 - This means that the biological groups are considered to respond and to integrate all the physical modifications to the river system.
 - If we look at the biota properly and we know enough about their requirements, they will indicate to us what is wrong with the system.
- Concluding comments
 - We should realize that the primary objective of RHP monitoring is not for biodiversity purposes as such.
 - The purpose is to determine the health/integrity of rivers based on biological responses that obviously have a link with biodiversity issues.
 - The focus of monitoring for RHP purposes is biological: to use the biota as indicators of river health.
 - Eventually we should use a range of biological indicators to indicate river health. We should not use only one indicator to assess river health: consider the Western and Eastern Cape where often only 1-3 fish species occur. The opinion was expressed that the FRAI and FAI are not suitable to assess the integrity of the fish assemblage because of this low species richness.
 - If we have a low species of fish richness there would generally be a lower number of fish indicators of river health, meaning that a higher weight would be awarded to the fish as an indicator of health and that macro-invertebrates would receive a higher weight in the overall assessment of river health.
 - The use of physical drivers as indicators of river health is usually limited to habitat integrity assessment that provides only a broad cause and effect relationship.
 - There should be links between the synoptic approach (many sites done at a relatively cursory level) for RHP purposes and the more detailed assessment for reserve determination and monitoring for impact assessment.
- At the moment the framework only looks at fish and macro-invertebrates – diatoms are also now coming into the picture.

10.1.1 Questions/Discussion

- In referring to EcoStatus Definition, Dr Dickens pointed out that the definition emphasizes the drivers and not so much the responses and he felt the definition may not be adequate? However, Dr Kleynhans said that within the overall EcoStatus concept for the reserve, one would obviously go for the drivers – this definition is still relevant for the RHP.
- This is a monitoring programme - but it is monitoring biodiversity. South Africa has a national conservation plan for the country which identifies priorities (mainly terrestrial priorities at the moment). In this framework, the driver will be the rivers which will lead the way to integrated conservation for the country. Will it help us to conserve the pristine rivers?
- When we do a RHP assessment for a particular water management area, we do a lot of sites relatively quickly, and if problems are then picked up during those assessments, one should go to another level of assessment where more emphasis is put on identifying the problems –

and more details are looked at. At the moment it is often difficult to pick up all the indicators around all the biota at the site.

- Maybe in future SoR reports the lotic wetlands should actually be brought in somehow as they are so important? Dr Roux agreed and said he would indeed like to see wetlands dealt with as part of rivers.
- There must be an understanding of the drivers; there seems to be no consistent way of dealing with water quality – nor with hydrology. The RHP must take care not to throw out the drivers, and the programme therefore needs to find a way to deal with the drivers as well. Dr Kleynhans suggested that if one has some information on water quality, hydrology and geomorphology it would be better to put it through the assessment of the Habitat Integrity and deal with it that way. However, if one has an ideal situation with abundant drivers and there are biological responses – then try to follow the full EcoStatus approach.

10.2 Development of a Riparian Vegetation Response Assessment Index (VEGRAI) : Dr Neels Kleynhans

The basic question from people may be that we have the Riparian Vegetation Index (RVI), why do we need an alternative index to assess the riparian vegetation? The RVI was developed during the early phases of the RHP and various problems were experienced with its use – these were documented in the proceedings of a Riparian Vegetation Workshop held in 2002. Water for Africa (Pty) Ltd received funding from the WRC to develop this index in collaboration with RQS of DWAF. The index will be developed during a number of expert workshops and a field testing phase during 2005-2006.

- Some of the negative comments about the RVI:
 - the RVI approach is too resource intensive.
 - Different practitioners also expressed concerns about the repeatability of results.
 - The results of the RVI are difficult to interpret.
 - There appears to be a “black box” situation in the calculation and interpretation of the RVI – a lot of the data collected during the field surveys is not used in the formula calculation, assessment and interpretation
 - At this stage, there is thus no tested or consistent method to determine the vegetation PES.
- There should be focus on the function of the riparian vegetation in terms of its function as a buffer or filter. Biodiversity is always important but is not the primary issue here.
- It is essential that approaches be considered that will allow the determination of the lateral extent of the riparian vegetation zone.
- The identification of different lateral vegetation zones should also be considered as these can be distinct ecological entities subject to different disturbances and effect on the instream component.
- The method that eventually results from this framework should preferably be adaptable for ecological reserve purposes and RHP purposes.

Questions/Discussion

- Dr Kleynhans confirmed that a buffer zone is implicit when one defines where riparian vegetation stops. VEGRAI should help with the process of identifying the buffer zone.
- One should consider doing VEGRAI separately (and not include it in the WRC's project) – it is an effort on its own and because there is a diversity of vegetation types all over the country. One approach won't meet all needs.
- VEGRAI is not intended to cope with mangroves (this is estuary work!).

- Dr Dickens said he was a little worried about the emphasis on function rather than biodiversity. i.e. would we accept that an exotic tree performing a function in a riparian zone is acceptable? Dr Kleynhans said that determination of the functional aspect of a riparian zone would focus more on disturbances – and exotics would be a disturbance – although it may be possible that some exotic trees may be better than bare ground.
- So one wouldn't worry whether a specific riparian zone was originally woody vegetation or grassland – as long as its present state is functioning and not disturbed?
In many cases, it would be possible to determine the original state. If not, one would evaluate it in its present state (i.e. if it is grassland – check there are no gulleys, no grazing, banks are intact etc.). Dr Dickens referred to a classic case on the Tugela River where two experts held completely diverse views on the original state of the vegetation (grassland vs woody).
- What detail is necessary for VEGRAI? According to Dr Dickens the major relevance of riparian vegetation is to stabilize the bank – and there are often alien species which cause erosion. It is important that where there should be grass, there is grass! Where there should be forest, there is forest! But how much more detail would VEGRAI need?

10.3 Policy objectives for conserving freshwater biodiversity: Dr Dirk Roux

This project branched out from the RHP. We needed to know how many rivers should ideally be in a natural state and how many in a pristine state, etc. and which rivers are suited for leaving in their natural/pristine states in order to conserve our freshwater biodiversity across the country? This activity is at national level and should not be confused with other biodiversity activities in the country.

- At this stage the policy is a partnership between DWAF (RDM but also involves RQS and national planning groups), WRC and the CSIR and has other interested organizations involved, i.e: SANBI, Botanical Society of South Africa and DEAT.
- Earlier this year there was a major conference in Paris and an important declaration on biodiversity was put together and signed by scientists who had been present at the conference.
- The declaration agreed that biodiversity is a natural heritage and a vital resource for all humankind; it is being irreversibly destroyed by human activities; and that a major effort is urgently needed to discover, understand, conserve and sustainable use biodiversity.
- Re the general state of freshwater biodiversity: freshwater ecosystems are in a much poorer state overall than terrestrial or marine ecosystems; the future extinction rate of freshwater animals is predicted five times greater than that for terrestrial animals and three times greater than that for coastal marine mammals; and that amphibians and freshwater fishes are thought to be respectively the world's most – and second most – threatened groups of vertebrates.
- The South African National Spatial Biodiversity Assessment (NSBA) 2004 considered terrestrial, estuarine, marine and river environments. They looked at the main rivers only and found that 65% of river signatures are endangered and 44% are critically endangered.
- Thus, South African has learned that:
 - socio-economic prerogatives place high demand on use of a limited resource;
 - *ad hoc* approaches to conservation have failed to provide acceptable balance between development and conservation;
 - absence of explicit vision for conservation of inland aquatic ecosystems; and
 - a mandate for managing South Africa's aquatic biodiversity spans across several sectors and national government departments.
- There are national mandates between:
 - i) DWAF – water resource management;
 - ii) DEAT – biodiversity conservation;
 - iii) NDA – land management; and

- iv) DPLG – development of integrated system of development planning.
However, there are also many reasons why it is so difficult to collaborate on a topic such as biodiversity.

WATER SECTOR	
<ul style="list-style-type: none"> • 1996 : 28 fundamental principles and objectives for a new SA water law • 1997 : White Paper on National Water Policy • 1998 : National Water Act • 2004 : National Water Resource Strategy • Proposed Water Resource Classification System 	
Natural	Human activity has caused no or minimal changes to the historically natural structure and functioning of biological communities ...and their habitats
Moderately used/impacted	Resource conditions are slightly to moderately altered from the natural class due to impact of human activity and water use
Heavily used/impacted	Resource conditions are significantly changed from the natural class due to impact of human activity and water use but are nonetheless ecologically sustainable
Unacceptably degraded	Due to over-exploitation, water resources are in a state that is ecologically unsustainable.

ENVIRONMENTAL SECTOR	
<ul style="list-style-type: none"> • 1998 - National Environmental Management Act, including 13 National Environmental Management Principles • 2003 - National Environmental Management: Protected Areas Act • 2004 - National Environmental Management: Biodiversity Act • 2004 – National Biodiversity Strategy and Act Plan (NBSAP), including a National Spatial Biodiversity Assessment (NSBA) • Categories of Threat Status (Biodiversity Act) 	
Protected ecosystems	Ecosystems of high conservation value or high national or provincial importance
Vulnerable ecosystems	Have high risk of undergoing significant degradation of ecological structure, function or composition
Endangered ecosystems	Have undergone severe degradation of ecological structure, function or composition as a result of human intervention
Critically endangered ecosystems	Have undergone severe degradation of ecological structure, function or composition: high risk of irreversible transformation

AGRICULTURAL SECTOR
<ul style="list-style-type: none"> • 1983 – Conservation of Agricultural Resources Act (CARA 43 of 1983) • Sustainable Utilization of Agricultural Resources Bill (draft)

- It is a challenge now to get the cross-sector discussion on the go – to get the four relevant departments talking to each other (at Chief Director and Deputy-Deputy Director levels).
- There are four high-level policy objectives (or principles) which will guide our operational policy for freshwater biodiversity:
 - i) achieve biodiversity representation (pattern) – strives to conserve a sample of the full structural and compositional collection of biodiversity associated with inland water resources, including all species as well as the habitats, landscapes and rivers in which they occur.
 - ii) Achieve biodiversity persistence (process) – strives to conserve the ecosystem functions and processes that generate and maintain biodiversity pattern in order to conserve biodiversity in the long term (selecting areas of high ecological integrity, maintain natural variability and disturbance regimes, select areas large enough to ensure persistence and to minimize threats to biodiversity loss).

- iii) Set quantitative conservation targets - strives to set minimum requirements for biodiversity conservation that would achieve biodiversity representation and ensure biodiversity persistence, while recognizing the need to balance utilization and conservation (assumptions associated with achieving this objective: targets are set at national level, national target cascade differentially to sub-national levels, targets are adaptively improved over time; and rehabilitation targets are instituted where necessary).
 - iv) Achieve sustainable implementation – strives to translate a conservation design into awareness, political will, capacities to enable ultimate adoption, where the adopter has both the absorptive capacity (understanding) as well as the emotional financial commitments to allow sustained use of the acquired knowledge (i.e. conservation design is efficient and pragmatic, land and water policy and management are integrated, stakeholders are effectively engaged and a monitoring and evaluation system is implemented).
 - v) A national network of “high protection” / heritage rivers should:
 - contain examples of all major inland aquatic ecosystems in relatively unmodified condition;
 - make provision for protection of rare, threatened or depleted species / ecosystems;
 - include areas sufficiently large to allow very long-term processes to take place;
 - include areas containing unusual diversity of habitats, species or communities; rare or threatened geomorphological features; natural refugia, centres of special endemism, etc.
 - Provide scientific reference sites to be used for biodiversity research as well as performance monitoring.
- The website address to note: www.csir.co.za/rivercons.

10.3.1 Questions/Discussion

- To elaborate on the relationship between the RHP and Conservation Planning: both have to do with biodiversity and that's where the relationship stops. The one is looking at the national level and the other one very much at provincial level. They are extremely complementary and should feed into each other and there is an active initiative to facilitate that process of interfacing between the two initiatives. Eventually a point may be reached where the two initiatives can operate under one umbrella. ACTION: D. Roux/Madikizela
- How will this approach fit into the RHP in future?
There are two possible ways. Firstly it requires a river health server to know where we are now and to provide some of the basic templates to allow for a systematic conservation plan. Once we have a conservation plan, one would like to monitor to ensure that priority areas are maintained in a natural/good state, the RHP would be the monitoring programme, so there could be some sort of interplay between the existing monitoring site selections and adding others to allow for effective monitoring of such a conservation system as well.
- How are tributaries going to be dealt with in this project?
At the time of the 2004 National Spatial Biodiversity Assessment – that was what was available – a unique uniform data layer did not exist for the tributaries of mainstems. There is no problem once a river health survey – or reserve determination - have been done, then the data exists for the tributaries as well. One can then go to the next level. Also the RDM is in the process of commissioning an initiative to update the ecological importance and sensitivity data layers and hopefully, this will include the tributaries as well.
- What collaboration is there between the Classification System and this new initiative?

The two talk to each other quite a lot. The classification system people say that they have identified what they want from this initiative and we anticipate that we will be able to collaborate on a few catchments in the future quite soon. The possibility is that there will be compulsory licensing exercises (Olifants catchment area) which will require classification to be done there as well and again, they would like to have a data layer that identifies their conservation priorities. All the provinces are doing conservation plans at this stage – many of them are including freshwater systems as well.

- Are NEMA and NWA conflicting acts/policies?
NEMA (the National Environmental Management Act) has a slightly higher status than the National Water Act (NWA). It would be ideal to reach a point where we get the DGs or Ministers of the four relevant departments to agree to these objectives – if the four of them could agree to endorse these objectives, then in a subtle way these objectives could, in future, start to influence subsequent policies and strategies within their respective departments. The National Water Resource Strategy has to be revised on a five-yearly basis so by the next revision we hope these objectives should then be part of it.
- Regarding the respective responsibilities of DWAF and DEAT, ideally the adoption of these objectives should be followed up with an implementation strategy and action plan for each department to mandate the responsibilities so there is no overlap, cracks or misunderstandings.
- It was generally agreed that there should be a conservation plan per river. Even if South Africa does not have the capacity to do this now, there should be focus on this for the future. Perhaps a conservation design for some of the priority estuaries should be built up, especially for rivers in the Eastern Cape. An estimation should be calculated of how much each river contributes percentage-wise to water in the catchment area. A whole picture needs to be built up for each river. A problem often encountered is that one river may be in two different eco-regions. The persistence target must be emphasized. There may be rivers that cannot be conserved in an A. condition. But there could be certain features of that river that one would like to conserve. Linkages are so important.
- It is noted that there is incredible good will from DWAF – including the engineers at Water Resource Planning who are fully behind this initiative.

11. PROGRAMME GOVERNANCE AND EFFECTIVE RIVER MANAGEMENT

11.1 Governance of the National Aquatic Ecosystem Health Monitoring Programme (NAEHMP) / RHP: Ms Shamilla Jhupsee

Why are we monitoring? The answer to this is laid down in the Constitution: Chapter 2: Bill of Rights, Section 24. a) “Everyone has a right to an environment that is not harmful to their health or well-being” and b) “to ensure that the environment is protected for the benefit of present and future generations”.

- In order to ensure adequate protection and sustainable utilization of the water resource, the National Water Act was promulgated in 1998 which mandates the Minister of Water Affairs to establish national monitoring systems to monitor, assist, record and disseminate information (amongst other aspects) the quality of our water resources.
- The National Water Resources Strategy recognizes that no single monitoring programme can provide or lead to a comprehensive assessment of the state of the water resources.
- The Strategic Framework for the National Water Resource Quality Monitoring Programmes and ensures that all monitoring programmes comply with the National Water Act and are effectively implemented and provide a description of the roles and responsibilities of the different tiers of government.

- After the implementation of the RHP there was a realization that DWAF does not have the capacity or expertise to implement the project nationwide, to address this concern, a model was proposed – The Programme Management Structure – from now on it will be that of provincial or local implementation which is the (operational ownership) and national development and co-ordination (custodianship).

Summary of roles and responsibilities of role players at different levels	
Level of responsibility	
Tier 1 – National level / National custodianship	National ministers, WRC, senior managers, specialist scientists
Tiers 2 & 3 – CMAs / Provincial / Regional offices / local level operational ownership	Provincial champions, provincial Task Teams (parks, universities, corporate)

TIER 1 (DWAF and DWAF managers)	
Role players	Responsibilities
Minister: DWAF	Lead agent, custodian, political endorsement, accountability
Minister: DEAT	Co-custodian, national partners (protocols and procedures)
CEO : WRC	Political endorsement, funding (R&D)
Executive manager: Water Resource Information Management	<ul style="list-style-type: none"> • Mobilize funding / support across various sectors • Guide and monitor implementation process
Senior manager: Resource Quality Services (<i>Dr Quentin Espey</i>)	<ul style="list-style-type: none"> • Integrate NAEHMP into organizational business plans • Secure resources • Accountable for progress in terms of strategy and business plans
Quality assurance manager (<i>to be appointed</i>)	<ul style="list-style-type: none"> • Quality control • Standardize the NAEHMP programme
Programme manager (<i>Mr Bonani Madikizela</i>) and operational assistant (<i>Ms Sharmilla Jhupsee</i>)	<ul style="list-style-type: none"> • Day-to-day management • Finance and operation • Training • Co-ordination of provincial activities • Support implementation teams • Communicate with stakeholders (e-com)
Specialist scientists (<i>Dr Neels Kleynhans, Ms Colleen Todd, Ms Christa Thirion</i>)	<ul style="list-style-type: none"> • Provide technical expertise • Develop techniques and methods • Maintain certification of samplers
TIERS 2 and 3 (CMAs, province ...)	
Provincial champions	Co-ordinate Provincial Task Teams
Provincial Task Teams (DWAF ROs, CMAs, Prov govt, SANParks, Universities, private organizations)	Responsible for data acquisition
Specialists (DWAF ROs, water boards, prov and national parks boards, universities, consultants) (<i>Ms Toni Belcher</i>)	<ul style="list-style-type: none"> • Technical expertise • Sharing skills, resources • Training • Applied research and development

- The title of “Chief Director” at DWAF has now changed to “Executive Manager”.
- Reporting: annual reports will be produced for the WMA monitored, accompanying each annual report will be a technical report; and a national SoR report will be produced every five years.
- To ensure information delivery at the three management tiers the governance process must:
 - maintain certain key requirements (e.g. centralized IT and infrastructure);
 - adopt common standards;
 - implement common quality assurance criteria;
 - co-ordinate and share scarce resources;
 - co-ordinate stakeholder activities;
 - support research and development for monitoring;

- DWAF managers with the National Steering Committee will offer strategic guidance to the governance procedure and other national functions;
- in order to ensure effective governance and the success of the programme there is an intention to establish a Memorandum of Co-operative Agreement. This will be a key document which will ensure commitment of all parties involved. This Memorandum will reduce the operational costs associated with the programme.

11.1.1 Questions/Discussion

- The “support” referred to (on table above), does it include funding?
We have national funding and separate provincial funds. In many instances national and provincial sites will overlap. Agreement must be reached as to who will be funding what. In principal, DWAF has to fund national monitoring sites.
- Pierre de Villiers said that often the provinces are doing their own funding – existing annual funding might cover 80% of RHP work, so in order to do the outstanding work, the balance of 20% funding still has to be found – or urgent work must wait until the following year’s funding to come through.
- Dr Espey said that if it is incumbent on DWAF to fund monitoring in accordance with DWAF policy, then DWAF should be prepared to pick up the balance of funding. The regions that are already operating sites should not be discriminated against. It would be wrong to pay for some provinces and not others. DWAF needs to look at the funding aspect of the legislation and at the RHP budget.
- The table showed that it is the responsibility of a provincial champion to co-ordinate the Provincial Task Team (PTT). The PTT is shown as being responsible for data collection. At this stage, this is not happening – is this really the plan?
Yes, it is the intention and is now being formalized in the Memorandum of Agreement.
- Dr Roux said that in some of the regions the PTTs actually do much more than collect data. In other places, collecting data is the minimum responsibility that DWAF, as the lead agent, will in future require from PTTs.

11.2 Network governance: Dr Dirk Roux

The RHP is reaching a stage of maturity where responsibilities have to be pinned down and formalized in order to have consistent education across the country. DWAF has now committed themselves to a number of important aspects and others need to “fill in”. Dr Roux mentioned that there is an explosion of interest in the river health field internationally.

- Network governance is the means for achieving direction and co-ordination of individuals and organizations to advance the interests / objectives to which they jointly contribute:
 - networking – reaching out and getting in touch with others; and
 - collaboration – working in combination with others.
- In a broad sense, ecosystem governance involves a link between science, government and society.
- Followers in voluntary organizations cannot be forced to get on board – if the leader(s) have no influence on them, then they won’t follow! True leadership cannot be awarded, appointed or assigned – it comes only from influence. Leaders communicate! The RHP certainly needs influence at the political level which is now being formalized and endorsed.
- The reason that the RHP exists (the core ideology):
 - to measure, assess and report on the ecological state of rivers in South Africa;

- to develop an information base in support of scientific and strategic management of rivers; and
- to educate the public at large regarding the health of rivers.
- The envisaged future of the RHP: is to complete at least one RHP implementation cycle for each major river system in South Africa by March 2007, while ensuring that surveys are not once-off events but are the beginning of a long-term river monitoring process that actively informs river management decisions.
- On the capacity side, once the core ideology and future vision are in place, the skills and equipment needs will be obvious in order to achieve the vision.
- Dr Roux again tabled lists of “Why it is so difficult to collaborate” and the proposed “Solutions” and lead the meeting through the points listed.

11.2.1 Questions/Discussion

- It was noted that one of the main aims of the proposed Memorandum of Agreement is to get the buy-in and support of the organization concerned. Thus if existing staff involved with RHP leave (national / provincial) – there will be a formal agreement for the organizations to carry on with the RHP work. The Memorandum of Agreement will also make it easier for individuals working with RHP: since there will be formal job descriptions and definitions.
- Talking of leading and following, a critical point for a leader is that in addition to leading, he *must* be able to follow – and whilst following - take leadership of the “following process”.

12. THE WAY FORWARD

12.1 IHI proposal: Dr Mark Graham

Dr Graham said that one of the things that came out of the EcoStatus Roadshow is that the IHI (Index for Habitat Integrity) is becoming more and more entrenched into the RHP, but it also was evident that without any supporting or benchmarking/calibration material, it is difficult to carry out river assessments. Ratings are largely subjective and, in the absence of laid-down benchmarks, people rated conditions/aspects differently: i.e. one person’s “critically infested” was different to someone else’s “moderately infested”. Funding from the WRC is hoped for towards providing a preliminary proposal to address the different elements of the IHI by putting together a sort of photographic field manual to aid evaluation. Some IHI elements may be easier to assess than others: there may be a problem at gauging issues such as flow modification or other water quality issues – so benchmarking such issues would be welcome. Provincial Champions will be approached for their inputs and experiences on how this project should be tackled.

Since elements and conditions in the Cape are completely different to the rest of the country, it will be useful for the Provincial Champions to have such differences spelt out with set suggestions for handling such differences. Such a manual/document could also prove a useful tool for training new practitioners.

12.2 Mini-SASS: Dr Mark Graham

One of the biggest questions at the moment is “Who owns Mini-SASS”? Its institutional support, maintenance and funding from Umgeni Water has now fallen away and Mini-SASS is currently an “orphan” despite the fact that it is potentially hugely valuable from an educational perspective.

When the Mini-SASS form was designed originally, a lot of money was spent on developing the website, which was specifically designed so that anyone (i.e. even a school) could capture data onto

a national GIS map. However, although lots of people were using the form, nobody used the website and it was eventually discontinued!

RECOMMENDATION – that consideration be given to re-establishing the Mini-SASS website: finding a home for it and re-designing the form (perhaps be incorporating some digital pictures or images).

ACTION: RHP STUDY TEAM

12.3 Development of a tool to measure turbidity (clarity) of water: Dr Mark Graham

Dr Graham reported that a water clarity tube has been developed to measure the turbidity (clarity) of water. Although such a device was available overseas, this is the first time one has been developed locally. It is hoped that this will become part of the standard SASS field kit. A short paper concerning this development will go into the journal and potentially onto the website. Anyone who is interested can get in touch with Dr Graham.

12.4 : Questions/Discussion

- **Dr Graham mentioned IHAS** has some flaws which need to be looked at. When Helen Dallas designed a new template for site assessment as part of incorporating data into the rivers database; it was decided to get rid of all the mathematics around IHAS but to retain the actual form because the information on it was valuable. So the top half of the form goes into the Rivers Database and the bottom half – and the mathematics – are now out.
- Champion for the KNP - Despite the fact that there are Provincial Champions in both Mpumalanga and in Limpopo, there is no designated champion in the Kruger National Park – which spans the two provinces. In order to improve communication, Dr Andrew Deacon suggested that a champion be designated specifically for the KNP.
DECISION: Dr Andrew Deacon is now the Champion for the Kruger National Park and as such, will try to improve the co-ordination between the KNP / Mpumalanga / Limpopo.
- Mpumalanga needs a network - between DWAF and other stakeholders – Dr Johan Engelbrecht from the Mpumalanga Parks Board confirmed that he is endeavouring to set up such a network. Ms Colleen Todd confirmed that she is setting up a meeting with the relevant regional offices.
ACTION: Ms Jhupsee will try to arrange a meeting between Dr Quentin Espey, Dr Johan Engelbrecht of Mpumalanga Parks Board, the Mpumalanga Regional Director and the CEO of SANParks.
- Dr Roux confirmed that there is quite a lot of momentum in the Northern Cape. Once the Northern Cape has its first product then the managers/senior people in the province will be more likely to pay attention. It is suggested that the Northern Cape work on a short-term product, i.e. a poster (possibly for the lower Orange). Dr Dickens said there is a possible window of opportunity here; he reported that he is part of a large consortium (IWRM) who are funding projects for seven rivers around the world – of which the Orange River is one – this is a four year project. Perhaps the whole of the Orange River catchment area could be covered in one report? There is some funding that could be used for the production of a SoR report for the Orange River and maybe the whole of the Orange/Vaal system could be done.
- Noted that the RHP should work on a catchment basis as opposed to a provincial basis.
- Mr de Villiers asked what kind of budget is available for the RHP in the Free State? Dr Roux suggested Mr de Villiers make his request known and speak to the right people early on regards funding.

- Mr Madikizela said there were challenges in Kimberley regarding biomonitoring training needs.
- Mr Fouché reported that he is having SASS nets made – and agreed to have extra nets made for the Northern Cape.

ACTION: MR FOUCHE

- Ms Strydom offered to help several provincial champions with the production of posters.
- KwaZulu Natal – Dr Roux said there had been difficulty in KZN with buy-in in the province. Dr Dickens said that commitment from the private sector (particularly from the forestry sector) in KZN is exceptionally good but buy-in from the provincial/national government sector is zero. This meeting needs to ensure improvement from government – which could take a couple of years, bearing in mind budgeting, etc. Mr Madikizela said he would be looking into improving this situation both nationally and provincially. He plans on organizing a senior level meeting between DWAF and other stakeholders. KZN provincial offices need to be advised that RHP is no longer an option but a firm responsibility on their behalf.
- Dr Dickens reported that he had liaised with Peter Goodman of KZN (in charge of aquatic staff), who had initially been very enthusiastic and the whole monitoring programme had been drawn up; however, it just never happened. It was suggested that Dr Dickens get in touch with Mr Goodman once again.
- Ms Wilma Strydom will assist Dr Mark Graham regarding the layout of government logos on the SASS certificates.

ACTION: MS STRYDOM

- Dr Quentin Espey is now the new chairperson of the RHP Steering Committee which meets twice a year. All queries and agenda items can now be directed to Dr Espey.
- Within the provincial teams there are others involved with RHP apart from the Champions, these people would like to be part of the get togethers, perhaps it would be possible to have a mini-symposium for them? **AGREED**
- Dr Dickens said that a while ago it was said that the provincial auditors would be paid to provide their services – the income from people's accreditation fees would pay for the auditor and the two would balance each other. Some of the local auditors may be consultants or government officials but who will carry the consultants costs? There are two models – central government (DWAF), if they feel it is important enough they will pay the auditor an annual retainer to do that auditing or those monies are recovered via the examination fees – or a combination of the two. Perhaps if those taking the exams pay a small fee out of their own pocket they will make sure that they know the work well enough to pass the first time!

13. CLOSURE

Dr Roux said he felt the symposium had been both valuable and stimulating. He thanked everyone involved for their contributions and said a special word of thanks to Ms Hill for her hard work at getting the symposium on track. /

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