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THE SOUTHERN AFRICAN SOCIETY OF AQUATIC SCIENTISTS

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From the EXCO:

"Water Resources as Ecosystems: Scientists, Government and Society at the Crossroads " SASAqS Workshop 2004: The Exco wishes to thank all the people who participated in the one day workshop, which was held after the conference. The outcomes of the workshop are attached to this newsletter.

Responses to the commentary by Patrick Denny on AJAS: Thank you to those members who have given their comments. A summary of all comments received will be sent out in the final SASAqS News of 2004. So any other people wishing to comment please do so before the end of November 2004.

LEADERSHIP NEWS LETTERS: Enclosed also find Letters 11 to 22 on CMAs by Mark Dent. Any queries regarding back issues or other comments can be sent to Mark Dent (mark@netshare.co.za).

- **JOB OPPORTUNITIES/ COURSES / BURSARIES AND FELLOWSHIPS:**

PROFESSOR/ASSOCIATE PROFESSOR/SENIOR RESEARCH OFFICER: IWR, Rhodes University

Candidates must be able to make a high level contribution, not only to the continued success of the Institute for Water Research, both nationally and internationally, but also to securing a diverse funding base for the Institute. The successful candidate will be eligible for the rotating Directorship of the IWR.

A PhD is essential together with a proven track record in a water-related research discipline (e.g. water resource/catchment management, surface/groundwater hydrology, wetlands/riverine ecology). The incumbent will be required to make contributions through contract research, postgraduate student supervision, teaching and policy development.

Application forms, further particulars and salary details are available at http://www.ru.ac.za/jobs or by phoning 046-6038004 or 6038115. Completed application forms should be returned to Rhodes University, Recruitment & Selection Section, P O Box 94, Grahamstown, 6140 by 22 October 2004.

Curricula vitae which are not accompanied by an official Rhodes University application form will, regretfully, be returned to candidates.

M.SC RESEARCH PROJECTS FOR 2005: Department of Zoology, RAU (University of Johannesburg from January 2005)

Applications are awaited for the following M.Sc projects based at the Zoology Department, RAU (University of Johannesburg from January 2005)

Closing date for the applications is the 31st of October 2004.

Competitive bursaries are available

For more information please contact: Gordon O'Brien, Zoology Department, RAU, Email: gob@rau.ac.za, Telephone: (011) 489-3820 or Prof. Victor Wepener, Zoology Department, RAU, Email: vw@rau.ac.za, Telephone: (011) 489-3373

Project 1
An ecotoxicology based study of the Elands (Mpumalanga), Thukela and the Mvoti (Kwazulu-Natal) rivers.

The study involves an assessment of the water quality (physico-chemical variables including toxicants) and sediment quality of the Elands, Thukela and Mvoti rivers by incorporating relevant water quality assessment procedures and indices. Additionally the study will assess the tolerances of selected organisms (standardised and representative indigenous organisms) to selected salt solutions and whole effluent.

Project 2
An ecotoxicology based study of the Thukela and the Mvoti estuaries (Kwazulu-Natal).

The study involves an assessment of the water quality (pysico-chemical variables including toxics) and sediment quality of the Thukela and Mvoti estuaries by incorporating relevant water quality assessment procedures and indices. Additionally the study will assess the toxicity tolerances of selected organisms (standardised and representative indigenous organisms) to the toxicants in the systems.

Project 3
An ecohydrology, habitat and biotic flow-preference assessment of selected aquatic biota in the Elands (Mpumalanga), Thukela and the Mvoti (Kwazulu-Natal) rivers.

The study includes a habitat assessment of the systems by incorporating various indices and procedures incorporated in the ecological reserve determination methodology and an ecohydrological assessment of the flow related variables of the systems assessed. This includes the in-stream flow requirements and flow stress response determinations and will incorporate the laboratory-based determination of the flow related environmental preferences of selected invertebrate and fish species.

Project 4
A biological assessment of the population dynamics of aquatic invertebrates in the Elands (Mpumalanga), Thukela and the Mvoti (Kwazulu-Natal) rivers.

This study involves a population dynamic assessment of the invertebrate populations and the incorporation of biological indices to determine the ecological integrity status of the systems assessed. Additionally the study will involve the species sensitivity distribution assessments of selected whole effluents and salinity toxicants, and an ecological flow preference / requirement assessment of selected invertebrates and vertebrates. Important aspects involve the comprehensive sampling and identification of aquatic macro-invertebrates in the systems, and the implementation indices of statistical analyses procedures.

Please visit the Society website on www.dwaf.gov.za/iwqs/sasaqs/ for updates on SASAqS matters.

Leadership Letter 11: Myths and misconceptions about information

In my previous letter I emphasised the importance of information systems for CMA leaders. I also indicated some of the key attributes needed for CMA information systems. This letter continues on the theme of information. The information dialogue is receiving increasing prominence as CMAs begin to form.

Myths and misconceptions about information systems for water resource management abound. Belief in myths drives behaviour and thus although these myths are seldom discussed explicitly, the behaviour of individuals and organisations indicates that these myths are strongly implicit in their framework of thinking. Two such myths are :-

1.. all the information is available, somewhere;
2.. information generation systems (models) are objective.

Myth:- all the data and information is available, somewhere

It is a myth that all the data and information necessary for integrated water resource management is available, somewhere. An example will illustrate this point. If one takes the raincatch surface area of ten thousand rain gauges (approx RSA total historical record) and divides it by the surface area of South Africa, the answer is 1 over 10 to the power 14. Rainfall is the primary input into our water modelling systems.

Belief in this myth leads to thinking that it is simply a case of finding the information, putting it together in a GIS and/or a relational database and disseminating it on the Web. The plethora of efforts to compile lists of meta data and information, is an indication that this myth is a strong implicit driver of behaviour.

The reality is that most of the information required for integrated water resource management is not available and has to be generated, through models of various forms. The credibility of this generated information is a key factor in integrated water resource management since it impacts on reasoning, shared understanding, trust, acceptability and wisdom as explained in my previous letter. Credibility will be conferred by those impacted by the consequences of the information use, i.e. the CMA Stakeholders. This has major implications for the paradigms of information management under the 1998 NWA. Co-operative governance over data and information will be a key issue for leadership.

Myth :- information generation systems (models) are objective

Models (information generation systems) are subjective. In essence, models are a sequence of assumptions, each of which is subjective. Information generation systems (models) are often construed as being objective because once the subjective assumption has been made it is applied consistently at all times (unless specifically changed). In this sense the information generation system (model) is consistent in its subjectivity. Models are not "fickle", like people, who can and do change their minds. Thank goodness!

Why is it so important for leaders to recognize and openly acknowledge the subjectivity of models?

The subjective nature of models which generate information has an effect on their use in negotiations. One of the worlds leading experts in the use of models in water resources negotiations had this to say,
"The sharing of models and information among interest groups assumes the acceptance by all parties of those models. At first this may seem straightforward and non-problematic since models are intended to represent the objective properties of the natural resource. However, since information generation systems are the product of human thought and are in essence a sequence of assumptions they typically have a subjective, cultural background. In addition they are often developed within groups or organizations that also partake in the negotiation process, either as parties or as external domain experts".

Negotiation experts concur that a careful study of the role of simulation models in water resource negotiations requires analysis of a number of:-

a.. strategic,
b.. tactical, and
c.. managerial aspects of model use.

In most decision-making situations the models are a means to help organise a learning or bargaining process, where it is important that they provide a framework, a mirror for our thinking, our reasoning, or justification for compromise. Models provide a safe space for us to test the possible consequences of our proposed actions.

Leadership letter 12 Three key factors and their consequences

Water sector leaders are beginning to explicitly recognise three key factors as South Africa draws closer to implementation of the CMA process. These are :-

1.. Data and information is crucial and it is highly sought after by contending water stakeholders.
2.. The DWAF is the primary collector of only a small portion of the required observed data.
3.. Interest based bargaining is imperative for water demand management and the process requires knowledge equity.

The licensing process has brought into sharp focus the importance of data and information and also their intelligent interpretation and integration. What is not understood cannot be managed or convincingly argued. Data and information form a basic foundation for understanding and power.

The second key factor which is now being openly acknowledged is that DWAF is the primary collector of only a small portion of the observed data. Added to this is the growing realisation that the information generated by working these data along with assumptions is a process that only yields trusted information when the generation process is inclusive and transparent. This has brought a new urgency to the imperative of co-operative governance. The need for an external customer focus on information management is being reported increasingly by the DWAF. CMAs will require information from many Government Departments and private sector stakeholder groupings. Data, information and knowledge power will certainly not be the preserve of the DWAF alone.

The third key factor is interest based bargaining. This is being recognised explicitly in a growing number of publications in the DWAF and elsewhere. Knowledge equity is vital to the success of interest based bargaining. Without knowledge equity the democratic process is fatally flawed, despite representative equity being present. Knowledge is vital for interpretation and use of the data and information. Supplying data & information alone does not constitute a leveling of the playing field.

As I explained in previous letters the "haves" are well organised and resourced in terms of knowledge power. The "have-nots" are not. A key leadership question then becomes, "how is the knowledge playing field going to be levelled". One response has been to initiate capacity building programmes. These are essential, but the time line for delivery of adequate capacity to match the well-resourced stakeholders, is decades, rather than months. The legal world provides us with the concept of pro deo representation. This is fast and effective. Increasingly leaders are contemplating pro deo knowledge support, in the bargaining process. Such support will partner capacity building programmes.

Leaders are compulsive question formulators and so inevitably they are asking, "who will fill the pro deo role". At least 3 options come to mind :-

1.. DWAF itself. However, this runs the risk of a player / referee clash of roles.
2.. Another State Department eg. DEA&T or organisations such as SALGA, IWMI, Mvula Trust or the CSIR, with funding assistance from central government.

3.. A consulting firm which has the trust of the previously disadvantaged and which is funded by central government.

There will be 19 CMAs, which collectively represent a substantial chunk of business for those willing to develop the opportunity to assist in achieving knowledge equity. Successful pro deo support will be founded on long-term relationships. Market leaders in pro deo services can look forward to sustained income over the medium to long term.

Leadership letter 13: Water knowledge management needs leadership

The delusion of being able to exercise bureaucratic control over the development and management of knowledge is prevalent in many organisations. A glance at the list of role players in the water field is enough to illustrate the folly of such a delusion. The players are :-

a. Rural and peri-urban poor
b. Metro and local councils
c. Sugar industry
d. Forestry industry
e. Irrigation industry
f. Mining industry
g. Conservation agencies
h. Tourism industry
i. Agricultural industry
j. Manufacturing industry
k. Our international neighbours. Mozambique, Lesotho, Botswana, Swaziland, Namibia, Zimbabwe
l. State departments of Water Affairs, Environment Affairs, Agriculture, SA National Parks, Foreign Affairs, SA Weather Services, Mineral & Energy Affairs and others,

Thankfully the 1998 National Water Act (NWA) explicitly recognises the multi-disciplinary and multi-organisational nature of the knowledge management challenge. Also implicit in the 1998 NWA and in many other related Acts and policies is the recognition that coercive or bureaucratic control over water resources knowledge is impossible. Knowledge is a living phenomenon and like all other living phenomena requires an environment in which to develop, grow and propagate. It is the primary function of leadership at all levels to take action to provide that environment.

Integrated information and knowledge management within and between stakeholder organisations in the water industry presents many intriguing leadership challenges. The socio-scientific process of water demand management (allocation) is the dominant overarching process within which water information and knowledge is created, diffused and used.

Knowledge is the key resource in intelligent reasoning, forecasting, design, planning, diagnosis, analysis, evaluation and intuitive judgement making. Knowledge provides the fuel for insights, ideas, leaps of abstraction and wisdom.

Knowledge is formed in and shared between individual and collective minds. It does not grow out of databases but evolves with individual and collective experience, successes, failures, reflection and learning over time.

Influential leadership is needed to ensure that knowledge management and the creation of a knowledge friendly environment is everybody's responsibility. We can all reduce barriers to communication, listen better, reflect more, choose our words more carefully, mentally "walk a mile in other's shoes" and thereby create the environment in which knowledge management will be successful and widespread. When the 1998 NWA is

implemented the knowledge management environment will receive a huge positive boost.

Leadership Letter 14: Leaders know it is not about structure

Peter Senge said, "We cannot know what it is to be human by looking at a list of body parts and their functions." He also said, "When it comes to organ-isations rather than organ-isms our systems thinking often lets us down."

I am reminded of the wisdom of these words as I reflect on the endless restructuring in almost every water related organisation. All these organisations have a duty to play a role in the integrated water resources management process. The goal of the process is to achieve the triple bottom line of efficiency, equity and environmental sustainability. I cannot help but think that what we really need is more re-cognition (re-thinking) and less re-structuring.

We need to recognise that we are dealing with a common resource and that whatever we do to it, there are consequences for others. In SADC 70% of the land area is comprised of shared river basins. We cannot restructure ourselves out of the imperative of transcending barriers to communication, which is central to integration.

We need to recognise that however we carve up the responsibilities, we will end up with multiple jurisdictions over activities that affect the water. We need to recognise that we are dealing with the formation of relationships between the different people and organisations which have different and overlapping jurisdictions over the common resource.

We need to recognise that we (at all levels, in all organisations) are leading a process NOT managing a project. We need to recognise that we are dealing with a highly complex, interconnected, responsive, living system of people and organisations NOT a machine that we can drive. One does not drive a process, one leads it.

We need to recognise that a marriage represents an organisation which has complex and multiple functional responsibilities, legal standing and financial obligations. A marriage has the simplest organisational structure (2 people) and yet that organisation is often highly dysfunctional and often disbands after a few years. Clearly, organisational structure has a role to play in integrated water resources management but it is a VERY limited role.

It will become evident in the years ahead that some CMAs will function well and foster healthy relationships and others will be gridlocked in a morass of costly, dysfunctional relationships. The difference will be in the cognition (thinking) of the leadership. The successful leaders will have re-cognised that integrated water resources management requires a level of interaction between

a. individuals,
b. disciplines,
c. organisations

such that we can

a. collectively,
b. timeously ,

c. wisely ,
d. cost effectively

visit the consequences of our proposed, present and past actions.

The daily actions of such leaders will be characterised by activities designed to build the capacity of people to reach over and gracefully transcend barriers to regular interaction.
Leadership Letter 15 Developing Creativity and Exercising Control

Developing an organisational environment in which CONTROL and CREATIVITY live side by side in an integrated fashion is the goal of most leaders. Most potential leaders of CMA stakeholder sector groupings, that I have spoken to, would concur that this probably describes their challenge in a "nutshell".

This letter is the first of 2 parts in which achieving creativity and simultaneous control are explored. There are many excellent working examples of this challenge having been met in society.

a. The Alphabet, 26 alphabetic characters combine to form millions of words, books, documents and the spoken word. Ignore the control point of the alphabet and chaos results.
b. 103 chemical elements (described in the Periodic Table) are the basis of millions of plant, insect, fish and other biota species and all the other natural and synthetic matter on earth. Staggering diversity !
c. The Internet is based on 7 layers of data transmission protocols. Conveying every e-mail & every web page ever created depends on conforming to these protocols. If one bit or byte is out of place, no communication !
d. Computers have combinations of 1's & 0's as their basis.
e. Accounting practices are founded on the basis of debits & credits
f. Money . Few coins, infinite combinations.
g. Colours, there are only three primary colours.
h. Nuts and bolts conform to a limited range of dimensions. Our toolboxes are therefore manageable in size, yet our creativity is not stifled.
i. A few computer operating systems and tens of thousands of creative applications that run on them.
j. Music notes. All the worlds music.
k. Containerization. The worldwide standard container sizing has revolutionized transport and loading mechanisms for containers and packaging in sub units of the container dimensions.
l. Football, hockey, rugby, tennis, baseball, cricket. A few lines & rules. Endless moves and combinations of moves and vast entertainment, business and communication empires are built.
m. Combinations of time expressed in seconds, minutes, hours, days, years are enough to describe time from creation to eternity

In essence what I have listed above are inter-operability standards which connect nodes of creativity in which variety is almost boundless and yet at the transfer interface to the next node rules and standards are rigid. If the latter are violated the system is rendered in operable.

Some generic attributes of the creativity/control process

a. reduced transaction costs through time saving;
b. each creation leads to further creations ;
c. break from the rigid control and chaos results;
d. controls are "invisible" to the participants until they are violated.

Business organisations that are successful, know where to CONFORM & where to COMPETE. They are able to channel more resources into competing because the do not waste resources on transaction costs that they would incur if they did not conform.

What is the relevance of this for CMAs and their leadership ? Creativity and control are essential elements of integration and co-operative governance. CMA leaders need to search wisely and relentlessly for areas of creativity and for inter-operability standards which will offer some forms of control. In the next letter I shall unpack this concept with specific reference to the needs of the CMAs.

Leadership Letter 16 Creativity & Control (cont'd)

This letter continues on the theme of developing creativity and control, simultaneously, in organisations. Information is a key element of both the creative and the control spheres in organisations. This will certainly be the case in CMAs where integrated information systems form a crucial support function for the integrated management of water resources. One of the well known yet often neglected facts about water related information is that a very high percentage of the useful information is generated through models and other methods of inference. Information generation and management in CMAs will be therefore be closely connected with people issues. Astute CMA leaders will develop an organisational environment in which wise controls reduce communication and information generation, transaction costs, to enable time and money to be spent on creativity.

A key question that CMAs leadership will inevitably ask of the CMAs Chief Information Officer (CIO) is, "Where will the wasteful information transaction costs occur if we do not conform to de facto standards? "

Part of the CIO's answer is sure to be, "The data structures for geographic data and for time dependent data are crucial areas for conformity. If we conform in these areas we will save much time for creativity."

Astute leaders will be convinced of the need for inter-operability standards for control and cost reduction. The next key question they will ask is simply, "Do we MAKE or BUY these systems?"

If information systems service providers to CMAs are to attempt to make (or invent the inter-operability standards), then it is pertinent to ask who else (in the world) will write applications to work off our SA inter-operability standards?

Businesslike leaders of CMAs will know that what drives inter-operability standards is market share, it is a numbers game. SA software developers are certainly no less intelligent than their USA & EU counterparts, but our markets are small. Even if ideas were created here they could only be developed into world standards by the large overseas markets. Some readers may recall that in the early 1990's REGIS, SPANS and IDRISI formed part of the GIS market in South African. Now ESRI products totally dominate the market. The message that leaders can draw from this is that the CREATIVITY part can be done locally but the CONTROL part will be entrenched where the markets are large. The two big players who will inevitably determine inter-operability standards are groups in the EU and the USA. In the months to come I will return to this theme as advanced developments in those two regions of the world unfold, at an increasing rate.

CMA leaders will not be surprised that these de facto standards for data structures and inter-operability are being driven by the same strategic business forces that are driving developments in water resources management in SA. These forces are expressed in global environmental and social conventions, driven by the world's growing consciousness of the issues. This awareness is finding expression in the so-called Triple Bottom Line, the Social Responsibility Index (SRI), Corporate Social Responsibility

(CSR) Programmes and legislation such as our 1998 NWA and events like the World Summit on Sustainable Development (WSSD).

Software developers for water resources systems have been encouraged by the emergence of huge markets overseas. Interested readers may like to perform a Google search for the TMDL programme and read of the market size. The leading developers are ESRI, the DHI, large public/private/academic consortiums, the EPA, the USGS and large EU sponsored projects such as HarmonIT. Products are emerging into the public domain and onto the commercial market that will certainly have a major impact in South Africa. Wise CMA leaders of the future will be tracking these developments.

Leadership Letter 17 Integrated Reasoning Support Systems (IRSS)

The increasing realization of the complexity of integrated water resources management issues has fed the development of what are often referred to as Decision Support Tools.

The word decision conjures up notions of :-
* control
* power
* authority
* domination
* winners & losers
* alternatives that are "thrown out".

Leaders know the power of words and therefore they recognise that all the above notions are fraught with strong emotions which are detrimental to the process of allocating water equitably in a transparent and democratic manner. This is especially so when multiple jurisdictions held by powerful stakeholders are at the core of the "risk" issues for CMAs. The recently published Umvoti to Umzimkhulu CMA Proposal document captures these risks succinctly.

Leaders know that what is required is for the participants to reason together, to think together, to explore consequences together and to reflect systemically together. Naturally decisions will have to be taken at the appropriate time. However, the information and modelling systems that we commonly refer to as decision support systems are primarily useful in the integrated reasoning stage. Modelling systems enable us to declare our assumptions and in the terminology of dialogue to "suspend" our thoughts in an open space for all to see and reflect on. Such systems are a core aid to developing institutional memory.

It is not surprising to witness the emergence of the term, "integrated REASONING support systems" rather than DECISION support tools to describe information and modelling systems.

Leaders also recognize that the word tool is not helpful. One uses a specific tool for a specific problem (eg a size 14mm spanner on a 14 mm nut). Implied in the use of the term TOOL therefore is the notion that the PROBLEM is precisely defined. We know that stakeholders often disagree strongly over the exact nature of the problem before they ever get to discussing the solution.

Leadership Letter 18 Leading in a "*demand management*" environment.

Leadership is influence. Leadership is not position, title or authority.
As we move firmly into the era of water demand management, it is empowering to reflect on the truth of the above statement. Most, if not all, of the big challenges facing society require influence (leadership) to be exercised at all levels. To the sceptics I would ask which single leader has the position, title or authority to dictate the success of the following ;-

- NEPAD;
- The African Renaissance;
- World wide sustainable development;
- Arresting global climate change;
- Alleviating poverty;
- Solving unemployment;
- Stopping crime
- Halting the decay of Family life;
- Implementing water demand management successfully?

To those looking for hope and direction in the situations above the insights of Fisher and Sharp in the following extract from their book entitled *"**Lateral Leadership**: - getting things done when you are not the boss"* are most empowering..

Without authority, you can:-

Improve your personal skills at getting things done:-

- Formulate your purpose in terms of results
- Think systemically from problems through diagnosis to strategy & tactics
- Learn quickly from experience by starting actions soon and reviewing often
- Become fully engaged in a challenging task
- Help create a climate of mutual support and feedback up, down & laterally.

Pursue the organisation's goal jointly using those same skills.

Work towards that goal by:-

- Asking good questions
- Offering data, ideas, suggestions & advice
- Modelling the behaviour you would like to see.

Treat those with whom you work as colleagues who may have better data & ideas.

Remain open to different ideas.

With authority of a CEO, you can:-

Improve your personal skills at getting things done:-

- Formulate your purpose in terms of results
- Think systemically from problems through diagnosis to strategy & tactics
- Learn quickly from experience by starting actions soon and reviewing often
- Become fully engaged in a challenging task
- Help create a climate of mutual support and feedback up, down & laterally.

Pursue the organisation's goal jointly using those same skills.

Work towards that goal by:-

- Asking good questions
- Offering data, ideas, suggestions & advice
- Modelling the behaviour you would like to see.

Treat those with whom you work as colleagues who may have better data & ideas.

Remain open to different ideas.

AND

You can make decisions no one else can.
You can order people to do things

Fisher & Sharp "Lateral Leadership" pg 199

Leadership letter for CMAs 21 Co-ordination needs practice

The complex, integrated, natural and human systems which make up our catchments call for co-ordinated and co-operative systems of management. In sport, it is unthinkable to speak of developing co-ordination without individual and team practice. Why then do we believe that in business we can achieve co-ordination through a few meetings and perhaps by passing around some documents? If we are going to achieve progress on integrated systems management in which many organizations participate then we are going to require practice.

Why is practice so important in meeting our complex challenges ?

There is overwhelming evidence that human beings have cognitive limitations when consciously grappling with complex challenges. However, we have enormous capacity to deal with complexity at the subconscious level, that we do not have at the conscious level. Through practice the subconscious can be trained to deal with exceptional complexity. All learning involves interplay between the conscious and the subconscious, that results in training the subconscious. Examples are driving a car whilst listening to the radio and holding a conversation; playing tennis or football whilst mentally working on complex match tactics; playing music in an orchestra; learning to read.

The fascinating power of the subconscious is that it is not limited by the number of feedback processes it can consider. For any meaningful interplay of conscious and subconscious, practice is essential. Creating a safe place, a practice field, where individuals and groups can experiment and fail is a key requirement for learning. The opportunities which simulation modelling offers for heuristic learning are consistent with the requirements for practice. Intelligent use of models enables us to probe the likely consequences of our actions, in safety. Such probing, in safety, is ideal for co-ordinated, systemic learning as individuals and as groups. Wise model use, exercises the sub-conscious, which is programmed in many ways, inter alia through culture, beliefs, and language in systemic loops rather than linear progressions.

One of the key outcomes of training the sub-conscious is the emergence of appropriate forms of control for groups. The CMAs will need such forms of control. There are strong worldwide trend towards cross-functional and self-managing teams, self-control, peer control and customer control. These forms of control results in organisations which are capable of developing more appropriate responses to changes in their environment and simultaneously achieving more stability and coherence in their sense of identity, purpose and vision. Higher productivity and creativity are also achieved. Such forms of control are, for example, central to the success of the modern computer industry in which it is not uncommon to have up to 1000 engineers & scientists from widely separated organisational units who display precise control and breath taking creativity, at the same time. Organisational behaviour strategies in the computer industry created the necessary balance between order and chaos, rules and serendipity, innovation and tradition. Systemic innovation in the computer industry required the ability to deal with uncertainty, develop sensible unrestrictive controls and standards. Prototyping and practice complete the picture. All of these imply excellent communication and managing the required change which recognised that knowledge and learning cannot be transferred but must be socially reconstructed through experience, language and practice. The CMAs will provide the organisational crucible to contain the energised

process for the duration of the practice time required. There will be no place to run; no alternatives; no way to avoid the practising that is the key to coping in the complex environment of integrated water resources management. Leadership is increasingly being acknowledged as a key to success in these "CMA practice fields". The first CMAs will commence work shortly.

Leadership for CMAs Letter22: Quickening of the pulse

It is predictable that the search will soon begin for organizations which successfully integrate the efforts of government, business and civil society in key areas. Such organizations will begin to enjoy significant moral and material support from exceptionally powerful constituencies. There is a growing consciousness and correspondent quickening of the pulse amongst those with leadership insight, who recognize that wisely lead Catchment Management Agencies (CMAs) have the potential to be one of the "model examples" of co-operation between government, business and civil society.

What evidence is there to support such intuition? There is much. I shall confine myself to only a few items in this letter.

The Sasol Chairman's Statement reported in Financial Mail 17 Sept 2004 Pg 62, reads, " Increasingly and correctly, businesses worldwide are embracing the attitudes, principles and operating practices of sustainability. Commendably, leading South African companies are at the forefront of this new-millennium shift. The introduction earlier this year of the JSE Securities Exchange Socially Responsible Investment (SRI) Index is welcomed and I am pleased that Sasol featured successfully in it." Sasol is a major stakeholder in several WMAs.

Financial Management, Sept 2004 carries the cover story, "Ground force - why Financial Directors are the new ecological guardians." They go on to say, "Corporate Social Responsibility (CSR) is rapidly ascending the business agenda, driven by investors' demands for better corporate governance. One key result is that more and more Financial Directors are finding themselves at the centre of CSR developments, as their skills are being sought to interpret and monitor financial, social and environmental benchmarks."

Wendy Lucas-Bull, the exceptionally successful CEO of retail banking in the First Rand Group is to leave the Group shortly to begin a new venture. She will focus on the interaction between government, business and civil society to deliver on the regions socio-economic imperatives. First Rand's Chairperson has indicated on their website that she has their blessing and support, although they are naturally sorry to lose her.

An increased role for women in water related dialogue is a key strategic need. This will inevitably be one of the strategic activities of the Women in Dialogue movement headed by the Mrs Mbeki, wife of the President. Lucas-Bull is also a founder member of this movement.

Moeletsi Mbeki (brother of the President) and Jonathan Oppenheimer (Anglo American) recently shared a public platform and spoke of the need for alignment of interests between government, business and civil society. Amongst his many roles, Mbeki is Deputy Chairperson of the SA Institute of International Affairs (SAIIA) and Oppenheimer is a council member of the SAIIA.

The Southern African Millennium Ecosystems Assessment reveals a striking connection between ecological stress and social conflict. As if to reinforce this finding the Nobel Peace Prize for 2004 went to a Kenyan environmentalist. This was a world first. CMAs

are a key instrument in the social process of allocating water resources in an equitable and sustainable manner. Wisely lead CMAs will be key instruments in the ongoing process of "water conflict" resolution.

President Mbeki has made this 5-year term, the period for delivery of a better life for all. Delivery must happen, now, was a point that he drove home at the recent SA Local Government (SALGA) conference in Cape Town. The Municipal Finances Act (July 2004) will benchmark cost structure for auditing and control purposes. Since Municipalities & Metros are key players (& thus financial contributors) in CMAs the Municipal Finances Act will impact on the synergies, co-operation and sharing of best practices in CMAs. In this regard local and national government; nationwide industries and nationwide civil society groupings will have an interest in finding common practices and technologies which can leverage economies of scale and reduce transaction costs. Modeling and information service providers to CMAs will certainly be made aware of such strategic imperatives.

The African Union devoted a significant portion of its agenda at the recent summit in Ethiopia to the issue of government & civil society partnerships. The CMAs are intended to facilitate co-operation at this interface on a local, national and even international scale, if one considers the reality of our "river connectedness" in SADC.

Wisely lead CMAs will position themselves as worthy of financing AND involvement by the abovementioned movements, who will certainly be looking to engage organizations with CMA like attributes. These attributes are :- a legal framework; a financial framework; a role player framework; and above all an integrating role in a field which is vital to the triple bottom line. The CMAs have all these ingredients. DWAF has had the vision and the tenacity to craft the 1998 NWA which is giving birth to CMAs after a 6 year gestation. DWAF is now about to "open its hand" and let the eaglet soar. I sense a growing confidence in DWAF leaders to trust their future ability to referee the CMA process, to trust their rules and field lines (in the NWA) and to let go, to let the game begin. I am sure that other government departments, business and civil society stakeholders will learn quickly, play well and make DWAF proud.