




EASTERN CAPE ESTUARIES MANAGEMENT PROGRAMME

M McKenzie • D Hay

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Water Research Commission 

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Eastern Cape Estuaries Management Programme

*Report on Phase One of the
Eastern Cape Estuaries Management Programme
July 1998 – December 2000*

M McKenzie and D Hay

*Institute of Natural Resources
Private Bag X01
Scottsville
3209*

Tel: 033 3460796

Fax: 033 3460895

Contact Person: Margaret McKenzie

Email: mckenziem@nu.ac.za

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The Eastern Cape Estuaries Management Programme Project Team during Phase I of the Programme was made up of the following INR staff members in alphabetical order by surname:

- ☛ Professor Charles Breen
- ☛ Stephen Cohen
- ☛ Duncan Hay
- ☛ Gail Knox-Davies
- ☛ Margaret McKenzie
- ☛ Doh Ngcobo
- ☛ Nhlanhla Sihlophe
- ☛ Amanda Xaba

The Institute of Natural Resources would also like to thank the wide variety of institutions, researchers, government officials and local stakeholders who have been integral to the success of this project.

Executive Summary

The Eastern Cape Estuaries Management Programme promotes the effective management and sustainable use of Eastern Cape Estuaries. Since the Programme's inception in mid-1998, its main thrusts have been to develop firstly, processes and tools for supporting estuary management and secondly, to enable and inform stakeholders so that they are able to participate meaningfully in estuary management. The first phase of the Programme was completed at the end of 2000. This report overviews the successes and failures of the first phase of the Programme that ran from July 1998 to December 2000. The second phase of the Eastern Cape Estuaries Management Programme will be implemented over the next three years (2001, 2002 and 2003).

The objectives of the first phase of the Programme's implementation were to

- ☛ enable and inform stakeholders so that they are able to participate in estuary management (See page 3);
- ☛ improve capacity amongst and collaboration between universities, government, civil society and other institutions (See page 5);
- ☛ develop a model estuary management planning process and Strategic Environmental Assessment as tools for supporting estuarine policy, management and research (See page 6);
- ☛ contribute to the development of Eastern Cape estuaries management policy to inform actions of the public and private sector (See page 6);
- ☛ develop a comprehensive Eastern Cape Estuaries Management Research Programme (See page 7);
- ☛ establish an information network to raise awareness of the importance of wise management of estuaries (See page 7); and
- ☛ establish a multi-institutional, multiracial and trans-disciplinary team with the capacity to conduct research and provide advice that informs management of Eastern Cape estuaries (See page 8).

The first phase of the Eastern Cape Estuaries Management Programme was largely successful in achieving its stated objectives. Some notable highlights were:

- ☛ The formation of the first estuary management forum in South Africa at the Bushmans-Kariega complex and the initiation of a process to form a similar structure at the Tyolomnqa;
- ☛ The successful initiation of an estuaries management research programme focussed on meeting the needs of estuary managers and users;
- ☛ The initiation of four estuary management planning processes at the Kowie, Bushmans-Kariega, Tyolomnqa and Mtentu estuaries;
- ☛ The establishment of a large database of Programme stakeholders; and
- ☛ The regular publication of Programme Newsletters and the ongoing maintenance of the Programme Website.

A principle focus of the project has been at a local estuary scale. A specific part of the report (Appendix A) focuses on this and highlights the following lessons learnt at a local estuary scale:

- ☛ Understand and appreciate that one is engaging a process that occurs in a particular social, economic and environmental context. Quickly learn about the context, but do not allow this to delay engaging stakeholders in the process.
- ☛ Accept what is uppermost in the mind of stakeholders is their problem. Focus on it and not on issues which, however fundamental, seem remote or irrelevant to stakeholders.
- ☛ Appreciate that the inability to solve the problem may reflect strong tensions between stakeholders and an absence of credible processes and structures for resolution thereof. First steps to a solution lie in easing tensions and creating a 'willingness to work together'. A technical solution cannot be effectively applied in the absence of a willingness to work together.
- ☛ Establishing a shared vision and goals helps to develop constructive relationships. It is particularly effective because it

encourages stakeholders to focus on what they would like to see rather than on the problems and tensions they currently experience. They become solution orientated rather than problem orientated.

- ☛ Identify and work with a local champion(s) who is non-threatening to other stakeholders; promote local leadership.
- ☛ Facilitation and logistical support are essential for at least three reasons: the starting point is frustration and conflict; stakeholders commonly are not aware of the policies, legislation, structures and processes which relate to the management of estuaries; and stakeholders probably do not have the resources necessary to initiate and sustain actions.
- ☛ Jobs and access to resources are uppermost in the minds of marginalised people. This will be their imperative.
- ☛ People may not realise or appreciate the importance of things they do not know. They become frustrated because progress appears to be thwarted, when in fact they are simply not following correct procedures; encourage patience while the procedures are followed.
- ☛ Interface with all spheres of government and ensure that local level activities align with the policies of government.

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Introduction to the Eastern Cape Estuaries Management Programme



Mangroves at the Mngazana Estuary

The Eastern Cape Estuaries Management Programme promotes the effective management and sustainable use of Eastern Cape Estuaries. Since the Programme's inception in mid-1998, its main thrusts have been to develop firstly, processes and tools for supporting sustainable¹ estuary management and secondly, to enable and inform stakeholders so that they are able to participate meaningfully in estuary management. The first phase

of the Programme was completed at the end of 2000. This report overviews the successes and failures of the first phase of the Programme that ran from July 1998 to December 2000. The second phase of the Eastern Cape Estuaries Management Programme will be implemented over the next three year (2001, 2002 and 2003). See the Phase II programme description at Appendix B.

Why was the Programme initiated?

The Water Research Commission initiated the Programme in recognition that effective management of Eastern Cape estuaries was urgently required to ensure their sustainability. The Institute of Natural Resources was chosen as the Programme's managing agency and remains in this position today. At the time it was noted that although fifty percent of the country's estuaries were in the Eastern Cape and many of them were thought to be in near pristine condition, little was known about most of them and even less about how society interacted with them. It was acknowledged that Eastern Cape estuaries offered enormous value to society due to their biological productivity, biogeographic representativeness and tourism potential. In light of this, there was concern over the lack of appropriate processes in the province to systemically address the multiple pressures from coastal development, tourism and a burgeoning catchment population.

¹ The intention is to promote self-reinforcing management

What were the Programme objectives?

The first phase of the Programme's implementation was founded on specific objectives that were conceptualised by the project team. They were to:

- ✦ develop a model estuary management planning process and Strategic Environmental Assessment as tools for supporting estuarine policy, management and research;
- ✦ contribute to the development of Eastern Cape estuaries management policy to inform actions of the public and private sector;
- ✦ develop a comprehensive Eastern Cape Estuaries Management Research Programme;
- ✦ establish an information network to raise awareness of the importance of wise management of estuaries;
- ✦ establish a multi-institutional, multiracial and trans-disciplinary team with the capacity to conduct research and provide advice that informs management of Eastern Cape estuaries;
- ✦ enable and inform stakeholders so that they are able to participate in estuary management; and
- ✦ improve capacity amongst and collaboration between universities, government, civil society and other institutions.



Bank of the Bushmans River Estuary

Who funded the Programme?

The first phase of the Programme was funded by:

- ✦ the Water Research Commission;
- ✦ the Tony and Lisette Lewis Foundation South Africa;

- ESF South African Breweries;
- ESF AngloGold; and
- ESF the Department of Environmental Affairs and Tourism (the Department funded the Mtentu Estuary Management Project that began in October 2000)

Phase One implementation

Success in meeting objectives

If any one idea about leadership has inspired organisations for thousands of years, it is the capacity to hold a shared picture of the future we seek to create

Enable and inform stakeholders so that they are able to participate in estuary management

During the Programme's work on individual estuaries (the Kowie, the Bushmans-Kariega Complex, the Tyolomnqa and the Mtentu) stakeholders have been enabled to participate effectively in estuary management through:

Vision
Present and future generations will be able to appreciate the natural heritage of the Tyolomnqa Estuary whilst enjoying the benefits of development founded on sustainable use and protection

Vision drafted by Tyolomnqa Stakeholders on 14 June 2000

- ESF the facilitated development of a common vision and goals for their estuary by the stakeholders at the Kowie, Bushmans-Kariega, Tyolomnqa and Mtentu estuaries. In addition the Programme has held a number of workshops to facilitate the implementation of actions to promote achievement of vision and goals by stakeholders;
- ESF the hosting of a two-day training workshop on the application of Strategic Environmental Assessment to estuary management (the CSIR was commissioned to conduct the workshop). The course was held on 27 and 28 July 1999 and was attended by 43 people. Participants included academics from Eastern Cape universities and provincial government officials involved in estuary management;



Representatives from the Ncera Villages preparing a presentation on implementation of the vision and goals drafted for the Tyolomnqa estuary, 15 August 2000

☞ the use of interactive workshop processes that are designed to maximise participation and encourage people to become actively involved in estuary management;

☞ the formation of an estuary management forum at the Bushmans-Kariega complex and a Task Team at the Tyolomnqa estuary (the Task Team is in the process of formally constituting itself as a forum). At the Tyolomnqa estuary the benefits of a formal institutional structure have recently

been demonstrated. A mining company has been granted a permit to prospect in the vicinity of the estuary. When representatives of the company approached an official from the Department of Water Affairs and Forestry to help in the identification of stakeholder groups for consultation purposes the official was able to refer them directly to the Task Team. The mining company made a presentation directly to the Task Team in November 2000;

- ☞ the Programme newsletter and website (see section on establishing an information network to raise awareness of the importance of wise management of estuaries) have also played an important role in enabling and informing stakeholders during the reporting period. In addition, Programme staff are regularly asked for advice and information on aspects of estuary management. For example, Programme staff have provided advice on the rehabilitation of a small estuary south of East London;
- ☞ informing stakeholders of the implications of legislation for their estuaries (during workshop discussions, through workshop documentation drafted by the Programme and the distribution of government documentation to stakeholders); and
- ☞ the introduction of isiXhosa/English translation during workshops facilitated the participation in estuary management of workshop delegates whose first language is isiXhosa.

² Senge PM, 1990. *The fifth Discipline: The Art and Practice of the Learning Organisation*. Currency Doubleday, New York.

Improve capacity amongst and collaboration between universities, government, civil society and other institutions

Representatives from a range of organisations (including all spheres of government, a wide range of community-based organisations, research institutes and environmental



Wonderful Danca (Amadiba Steering Committee) and Pam Pretorius (Ufudu Fly-fishing) at a Mtentu Stakeholders Workshop, 25 May 2000

interest groups) have participated in the various workshops and events of the Eastern Cape Estuaries Management Programme. This has fostered collaboration between these groups in a formal context and also helped to build informal links. A workshop held with Mtentu stakeholders provided a concrete example of the benefits of collaboration when formal channels of communication were opened up between stakeholders on the catch and release fly-fishing operation that was taking place illegally on the Mtentu estuary. Following discussions among the various groupings, the Department of Environmental Affairs and Tourism granted an permit, on an experimental basis, to the Amadiba Coastal Community Development Association (a representative organisation of the local community) to allow them to conduct the fly-fishing operation with a commercial partner from October to

December 2000.



Joseph Abraham, Kenton-on-Sea Nature Conservation Office, and Rolly Dumezweni, then CEO of Boesmans Rivier Mond TLC, on the Bushmans, Kariega and Kowie field trip, 20 October 1999.

Institutional structures that have been established, such as the Bushmans-Kariega Estuary Management Forum and the Tyolomnqa Task Team, provide formal forums where interaction can take place between universities, government and civil society. An example of improved collaboration can be found at the Bushmans-Kariega Estuary Management Forum where

stakeholders are investigating various alternative solutions to sedimentation problems in their estuaries. Once an alternative has been selected, permission will be required from the provincial environmental department before implementation can proceed. A working group has been formed which includes estuary stakeholders and a representative of the provincial department. This working group allows for direct communication between the provincial department and stakeholders so that problem areas can be ironed out prior to seeking permission from the department.

The Eastern Cape Estuaries Management Programme stakeholders database is also a key tool that is used to promote networking between stakeholders, as it is used by stakeholders to contact other groupings in the province. This database was also used to select stakeholders to invite to the Department of Environmental Affairs and Tourism's National Estuaries Workshop that took place in May 2000.

Develop a model estuary management plan and Strategic Environmental Assessment as tools for supporting estuarine policy

During the first Phase of the Programme, a local estuary management process was initiated at four estuaries. An explanation of this process is attached (Appendix A).

In addition, the CSIR training workshop on the application of Strategic Environmental Assessment to estuary management was used to develop Strategic Environmental Assessment as a tool for supporting estuary policy and management.

Contribute to the development of Eastern Cape estuaries management policy to inform actions of the public and private sector

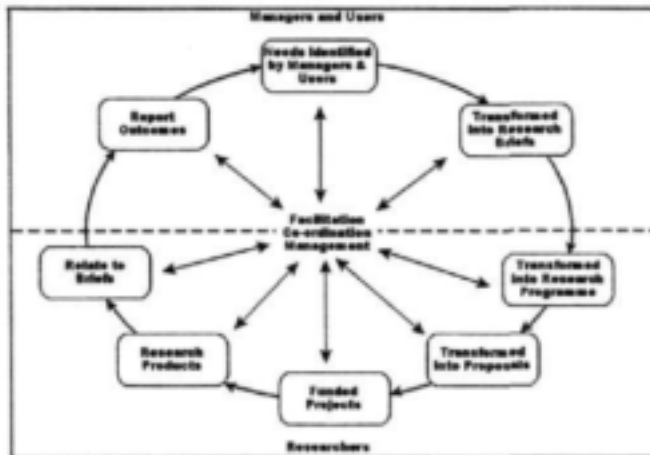
Two graduate students from the Centre for Environment and Development (University of Natal, Pietermaritzburg) are working on masters projects related to estuary management policy in the Eastern Cape:

- ☛ implications of natural resource policy on the behaviour of people and natural systems (using a case study); and
- ☛ appropriate institutional structures for local estuary management.

It is anticipated that these projects will both be completed by mid to late 2001.

Develop a comprehensive Eastern Cape estuaries management research programme

During the development of the Eastern Cape Estuaries Management Programme sedimentation was identified as a major problem in the Eastern Cape. In order to investigate this issue a workshop was held in Port Alfred on 13 April 1999 to discuss the need for further research into methods of removing sediment from estuaries. At the workshop it was agreed that further research was required and Dr Eckart Schumann was tasked with developing a proposal for submission to the Water Research Commission. A proposal was submitted to and has been supported by the Water Research Commission.



Process that is being used to develop and implement the Estuaries Management Research Sub-programme.

In February 2000 the Programme held a workshop with a range of estuary managers and users to identify strategic research needs. Following the workshop the Programme developed a comprehensive research proposal to address the research needs of estuary managers and users. The Water Research Commission is funding the research proposal. The Programme Management Team has identified project teams to take forward the individual projects in the Sub-programme.

Establish an information network to raise awareness of the importance of wise management of estuaries

By the end of 2000 the Programme had expanded its database of Eastern Cape Estuaries Management Stakeholders to 428 (from 233 at the end of 1999). The Programme newsletter, which is distributed quarterly, is sent to all people on the database. In total seven issues have been distributed during Phase One of the Programme. The newsletter covers various aspects of estuary management and provides progress reports on the status of the Eastern Cape Estuaries Management Programme. The database is also used extensively by the Programme to disseminate information on an ad-hoc basis.

In addition to publishing the newsletter, the Programme established a website (<http://www.inr.unp.ac.za/eestuaries>). This website is maintained on a regular basis by Programme staff. This site reports on progress being made by the Programme and raises awareness regarding estuary management issues.

Establish a multi-institutional, multiracial and trans-disciplinary team with the capacity to conduct research and provide advice that informs the management of Eastern Cape estuaries

Through the implementation of Phase One the Programme has developed a strong internal implementation team at the Institute of Natural Resources. This is a multi-racial and trans-disciplinary team with the capacity to undertake the wide range of estuary management tasks involved in the implementation of the Programme. In addition to the internal team, the Programme has involved researchers from a wide variety of institutions in the Eastern Cape in the workshops and events that have been hosted by the Programme. These researchers have played an important role by providing advice and information during the workshops.

As part of the research sub-programme the Eastern Cape Estuaries Management Programme called for expressions of interest from researchers interested in participating in the six (out of seven) research projects that are being subcontracted. During December the Programme selected project teams that will make up a multi-institutional, multi-racial and trans-disciplinary team to specifically take forward estuaries management research.

Programme events

The events hosted by the Programme during Phase One are listed below:

Event	Date
Workshop to develop a proposal on the removal of marine sedimentation from estuaries in South Africa.	13 April 1999
Meeting with staff of the Department of Economic Affairs, Environment and Tourism to brief them on the Programme	8 June 1999
Kowie Estuary management workshop I	8 July 1999
Bushmans-Kariega Estuary management workshop I	9 July 1999
Workshop on the application of Strategic Environmental Assessment to estuary management. Conducted by the CSIR.	27 & 28 July 1999
A Wild Coast field trip to the Mtentu, Msikaba and Mngazana Estuaries.	2-5 September 1999
Bushmans, Kariega and Kowie Estuary field trip	20 October 1999
Kowie Estuary management workshop II	21 October 1999
Bushmans-Kariega Estuary management workshop II	22 October 1999
Eastern Cape estuaries management research: strategic needs analysis workshop	22 February 2000
Mtentu Estuary marine living resources use workshop	24 & 25 May 2000
Bushmans River Estuary field trip	12 June 2000
Bushmans-Kariega stakeholders meeting	12 June 2000
Kowie Estuary field trip	13 June 2000
Kowie Estuary management plan: meeting to discuss progress	13 June 2000

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Tyolomnqa Estuary field trip	13 June 2000
Tyolomnqa Estuary management plan: workshop I	14 June 2000
Tyolomnqa Estuary workshop with representatives from the Sandile, Phози and Ncera Villages	15 August 2000
Tyolomnqa Estuary management plan: workshop II	16 August 2000
Meeting with the Bushmans-Kariega estuary management forum executive committee	26 October 2000
Presentation by Andrew Lucas of the Department of Water Affairs and Forestry on the implications of the Water Act for estuaries (hosted and arranged by the Eastern Cape Estuaries Management Programme),	27 October 2000
Mtentu Estuary vision and goals workshop	30 November 2000

Programme publications

The publications produced by the Eastern Cape Estuaries Management Programme during Phase One are listed below:

Publication	Date
Draft Kowie Estuary management plan (Part I)	July 1999
Draft Kowie Estuary management plan	November 1999
Draft Bushmans-Kariega Estuary management plan (Part I)	July 1999
Draft Bushmans-Kariega Estuary management plan,	November 1999
Proceedings of the Wild Coast field trip to Mngazana, Mtentu and Msikaba	September 1999
Estuary management: a primer, version 1	June 1999
Draft discussion document on options for the establishment of an estuary management forum: prepared for the Bushmans-Kariega Estuary management working group	11 February 2000
Starter document for Eastern Cape estuaries management research strategic needs analysis workshop	22 February 2000
Proceedings of the Eastern Cape estuaries management research strategic needs analysis workshop	22 February 2000
Starter document for the Mtentu Estuary marine living resources use workshop	24 & 25 May 2000
Proceedings and outcomes from the Mtentu Estuary marine living resources use workshop	24 & 25 May 2000
Proceedings from the Bushmans and Kariega estuaries stakeholders meeting.	12 June 2000
Report on progress made in implementing the draft Kowie management plan.	June 2000
Proceedings from the stakeholders workshop to initiate a management process for the Tyolomnqa Estuary	14 June 2000
Inhlanganiso ebandakanya abahlali base Phози Village, Sandile Village nabase Ncera Village	15 August 2000
Starter document for the Tyolomnqa estuary stakeholders workshop	16 August 2000
Proceedings from the second stakeholder workshop to initiate a process for the Tyolomnqa Estuary	16 August 2000
Starter document for the Mtentu Estuary management workshop	30 November 2000

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Proceedings of the Mtentu Estuary management workshop	30 November 2000
Eastern Cape Estuaries Management Programme newsletters.	Issues 1, 2, 3, 4, 5, 6 & 7 over the entire period
Eastern Cape Estuaries Management Programme website	Updated on a continual basis

Project proposals

During Phase One the Eastern Cape Estuaries Management Programme has developed and submitted the following project proposals to support aspects of the Programme or to assist local communities with which it is working:

- ☛ a proposal to conduct research into the removal of marine sediment in South African estuaries was submitted by Eckart Schumann (UPE) with support from the Eastern Cape Estuaries Management Programme staff to the Water Research Commission at the end of April 1999. The proposal was funded in 2000 and is currently being implemented by Dr Schumann;
- ☛ an Eastern Cape Estuaries Management Research Programme Proposal was submitted to the Water Research Commission. The Water Research Commission has indicated that it will fund the Programme to approximately two-thirds of the budgeted amount;
- ☛ a project concept note on Promoting Estuary Based Business Opportunities in the Eastern Cape was submitted to the Department of Environmental Affairs and Tourism Coastal Based Poverty Alleviation Project Fund. This proposal was unsuccessful;
- ☛ a project concept note for a Mtentu Estuary Management Project was submitted to the Department of Environmental Affairs and Tourism Coastal Based Poverty Alleviation Project Fund. This proposal was shortlisted and a business plan was submitted and accepted for funding by the National Department of Environmental Affairs and Tourism. The three core elements of the proposal are: the development by stakeholders of a common estuary management plan; the training of local community members in natural resource management and tourism business enterprise skills; and the development and building of tourism infrastructure to expand the already existing community-based tourism enterprises;

- ☛ a project proposal was submitted to the Water Research Commission Partnerships Fund for a project entitled Eastern Cape Estuaries Local Community Capacity Building on 31 August 2000. This proposal was unsuccessful; and
- ☛ a project proposal for the broader Eastern Cape Estuaries Management Programme (2001 to 2003) has been developed and has been distributed to funders.

Students funded by the Programme

The masters thesis of three students were funded by the Programme during Phase One:

- ☛ Stephen Cohen (a part-time masters student at the Centre for Environment and Development and former employee of the Institute of Natural Resources). Stephen is examining the implications of natural resource policy on the behaviour of people and natural systems through the use of a case study at the Mtentu estuary. Stephen is currently employed by the European Union Wild Coast Spatial Development Initiative Project;
- ☛ Magamase Ntlabati (a full-time student at the Centre for Environment and Development). Magamase is investigating appropriate institutional structures for local estuary management in South Africa; and
- ☛ Yvonne Nsubunga (a part-time masters students at the Department of Environmental Science, Rhodes University – partially funded by the Programme). Yvonnne is researching the sustainable use of living resources on the Kowie estuary.

Programme management team

The INR programme management team during Phase One was:

- ☛ **Duncan Hay:** Duncan Hay is a director of the INR. He has a MSc in Zoology from the University of Natal and a postgraduate diploma from the University of Cambridge. Duncan had overall responsibility for Phase One.
- ☛ **Professor Charles Breen:** Professor Charles Breen has recently retired as CEO of the INR, but is still actively involved in a



Eastern Cape Management Programme Staff, Margaret McKenzie, Charles Breen and Doh Ngcobo during a field trip on the Tyolomnqa Estuary (Picture: Alan Boyd)

number of projects. Charles advised the management of Phase One and was actively involved in the facilitation of estuary management plans.

☞ **Margaret McKenzie:** Margaret McKenzie is a Project Manager at the INR. She has a MSc in Environment and Development. Margaret was the project manager of Phase One of the Programme.

☞ **Doh Ngcobo:** Doh Ngcobo is a Project Manager at the INR. She is completing a Masters in Environment and Development part-time. Doh was involved in the facilitation of workshops during Phase One of the Programme.

☞ **Stephen Cohen:** Stephen was employed as a Project Manager at the INR. He is completing a Masters in Environment and Development part-time and was involved in the implementation of the Phase One of the Programme. Stephen left the INR at the end of October 2000 to work on the Wild Coast Spatial Development Initiative.

☞ **Nhlanhla Sihlophe:** Nhlanhla replaced Stephen Cohen as a project manager at the INR in November 2000. He is currently completing a Masters thesis in Hydrology. Nhlanhla was involved in the implementation of the Phase One of the Programme during November and December 2000.



Nhlanhla Sihlophe (center) with Mrs Denge, Chairperson of the Amadiba Coastal Community Development Organisation (ACCODA), and Mr Ndovela, ACCODA, at the Mtentu Estuary Management Workshop on 30 November 2000.

☞ **Gail Knox-Davies:** Gail is the programme administrator at the INR. She holds a South African Institute of Management

diploma in Business Management. Gail was responsible for the administration of Phase One of the Programme and the Programme website.

- ☛ **Amanda Xaba:** Amanda has recently joined the INR as an administrative assistant. She provides administrative support to the Eastern Cape Estuaries Management Programme.

Conclusion

Overall the Phase One of the Eastern Cape Estuaries Management Programme has been successful with some notable highlights:

- ☛ The formation of the first Estuary Management Forum in South Africa at the Bushmans-Kariega complex and the initiation of a process to form a similar structure at the Tyolomnqa;
- ☛ The successful development of an estuaries management research programme proposal focussed on meeting the needs of estuary managers and users;
- ☛ The initiation of four estuary management planning processes at the Kowie, Bushmans-Kariega, Tyolomnqa and Mtentu estuaries;
- ☛ The securing of funds to not only take forward the Mtentu estuary management planning process but to support the training of community members in natural resource management and business skills and to support the expansion of community-based tourism enterprises at the Mtentu estuary;
- ☛ The establishment of a large database of Programme stakeholders; and
- ☛ The regular publication of Programme Newsletters and the ongoing maintenance of the Programme Website.

Some of the disappointments of the Programme for the reporting period were:

- ☛ Due to the large number of other initiatives planned to take place at the Mngazana estuary, the initiation of an estuary management planning process at that estuary has been delayed until 2001 to ensure proper co-ordination between the processes;

- ☞ Unlike the stakeholders at the Tyolomnqa and Bushmans-Kariega estuaries, stakeholders at the Kowie estuary have not managed to take forward actions without the direct support of the Institute of Natural Resources. The Programme will review the problems encountered at Kowie in order to avoid the same obstacles at other estuaries; and
- ☞ During 2000 the Programme intended to initiate a process to develop policy guidelines for the Eastern Cape. Due to the higher than expected costs of initiating and supporting estuary management planning process, this component of the Programme has been delayed to 2001.

The Way Forward

In order to consolidate and build on this success, an expanded Phase II of the Programme is planned for the next three years (2001, 2002 and 2003). The expanded programme will have four Sub-programmes:



Diagram illustrating the relationships between the four Sub-programmes

- ☞ **Local Estuary Management:** The Local Estuary Management Sub-programme will build on the work already done by the Programme in developing estuary management systems and in promoting their application at local level. This Sub-programme has two goals: to develop estuary management systems; and to promote the implementation of estuary management systems at a local level;
- ☞ **Estuary Management Policy:** The Estuary Management Policy Sub-programme has one goal: to contribute to the development of Eastern Cape estuaries management policy guidelines to inform the actions of the public and private sector;
- ☞ **Estuary Management Capacity Building:** The Estuary Management Capacity Building Sub-programme has three goals: to build the capacity of estuary management forums (and stakeholder groups that are likely to form forums) to participate in the management of their estuaries; to build the capacity of previously disadvantaged individuals and groups in the implementation of local estuary management systems and estuary

management research; and to build the capacity of Eastern Cape based researchers to implement local estuary management systems; and

- Estuary Management Research: The Estuary Management Research Sub-Programme has three goals: to facilitate and enhance participatory management for the sustainable use of Eastern Cape and South African estuaries; to foster collaboration amongst estuary researchers and managers; and to establish a culture of integrated estuary management research.

Further details on Phase II of the Programme can be found at Appendix B. Please note that only the Estuary Management Research component of Phase II of the Programme has adequate funding. The Institute of Natural Resources is still looking for funding for other phases of the Programme.

Appendix A: Promoting Local Estuary Management

Changing context of estuary management in South Africa

'Management of South African estuaries has been, in the main, undertaken on a piecemeal basis usually driven by sectional interests...' (Mouat and Quinn, 1999)

As indicated above estuary management efforts in South Africa have tended to be reactive, focusing on individual components of estuaries in isolation from the influence of other components. This problem of fragmented management is not unique to South Africa. For instance, a comparative study of the Tagus estuary in Portugal and the Humber estuary in England found that the management of estuaries is fragmented in those countries (Fernandes *et al*, 1995).

However, the context in which estuary management takes place in South Africa has changed considerably over the last few years. The Constitution of South Africa (The Constitution of the Republic of South Africa, Act 108 of 1996) specifically emphasises the need for cooperation between the various spheres of government and encourages participation of the public in governance. More specific to estuary management the National Environmental Management Act (No 107 of 1998) provides a framework for the integration of the environmental management activities of the various spheres of government. In particular, the Act establishes a Committee for Environmental Coordination that comprises representatives of national government departments, relevant provincial departments and local government. The purpose of the Committee is to promote the integration and coordination of the environmental functions of the various organs of state. It is also planned that the Committee will have a Coastal Management Subcommittee (Department of Environmental Affairs and Tourism, 2000). In addition, the Act established a number of procedures to promote cooperative environmental governance.

Other relevant legislation and policy includes the National Water Act (No 36 of 1998) and the White Paper for Sustainable Coastal Development in South Africa (Department of Environmental Affairs and Tourism, 2000). The National Water Act sets out the framework for the management of water resources in South Africa, including estuaries. The Act specifically makes provision for the management of water resources on a catchment basis,

instead of managing the individual water systems in isolation from the broader context. The Act also provides for the establishment of various water management institutions that provide for participation of non-governmental stakeholders.

The White Paper for Sustainable Coastal Development in South Africa (Department of Environmental Affairs and Tourism, 2000) lays out the national government policy for coastal management. The four key messages of the white paper are:

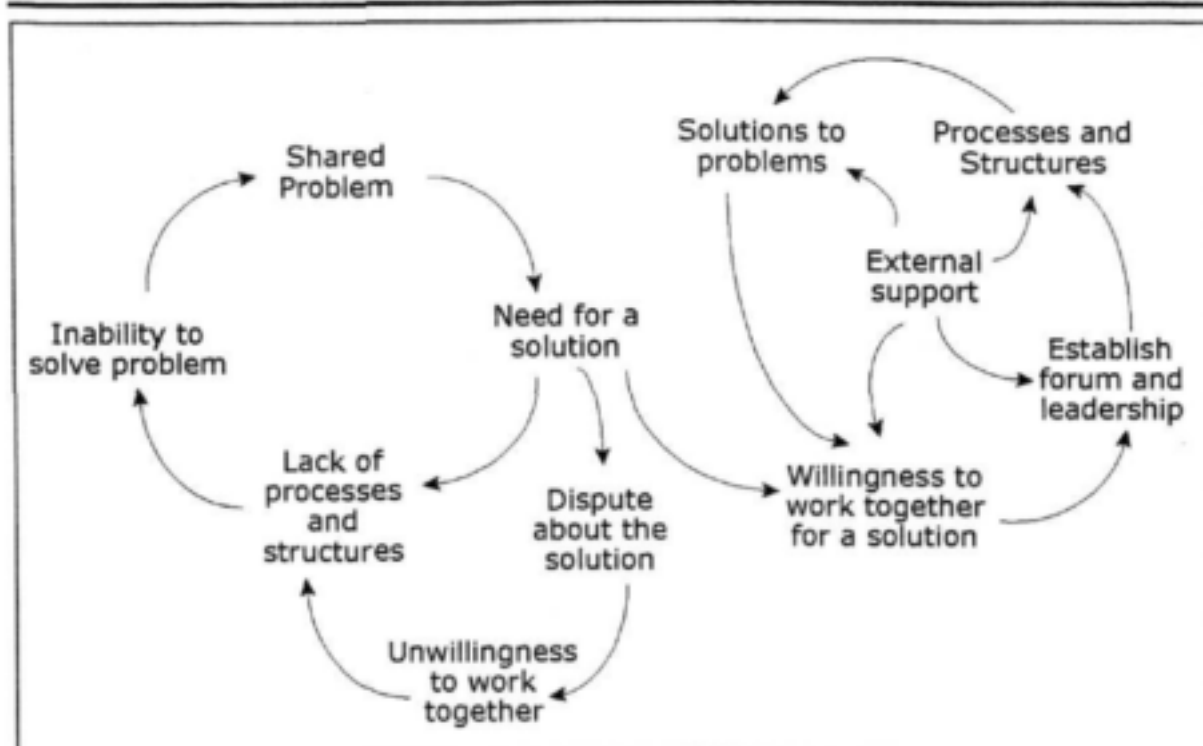
- ☛ the value of the coast must be recognised;
- ☛ sustainable coastal management must be facilitated;
- ☛ coastal management must be coordinated and integrated; and
- ☛ government must adopt a cooperative style of management.

The White Paper lays out a framework for national, provincial and local coastal management that specifically encourages integration and cooperative governance.

As a result of these recent policy and legislative changes at a national level, there is increased emphasis on integrated and coordinated management of estuaries. This was highlighted during the National Estuaries Workshop held in May 2000 that was well attended by government and non-government estuary stakeholders (Boyd, Barwell and Taljaard, 2000). In particular, the workshop proposed the formation of Local Estuary Management Forums for individual estuaries that should include local stakeholder groups (Boyd, Barwell and Taljaard, 2000). This approach to estuary management is in-line with international trends in estuary management where because of the interconnected nature of estuaries, estuary management is moving away from managing in a sectoral manner and estuaries are now being managed as multifunctional systems (van Western and Scheele, 1995).

The response of the Eastern Cape Estuaries Management Programme

The Eastern Cape Estuaries Management Programme is intended as a long running project that was initiated in 1998. The overall goal of the Programme is to promote the effective management and sustainable use of Eastern Cape estuaries. The Programme is managed by the Institute of Natural Resources



Generic Framework illustrating the broad approach used by the Programme to implement local estuary management at the four estuaries.

(INR) and is funded by the Water Research Commission, South African Breweries, the Tony and Lisette Lewis Foundation South Africa and AngloGold. One of the core activities of the Programme is the promotion of local management of estuaries. In particular the Programme aims to promote integrated and cooperative management at a local level that involves civil society. The Programme has been active in promoting local management of estuaries at four estuaries along the Eastern Cape Coast: The Bushmans-Kariega Estuary complex, the Kowie Estuary, the Tyolomnqa Estuary and the Mtentu Estuary (See Annex I for an introduction to the four estuaries).

The approach used by the Programme to implement local management of estuaries has been adapted and refined through the Programme's experiences at the four estuaries. In order to understand better the successes and failures of the Programme at a local level a generic framework (illustrated in the above diagram) has been developed. The purpose of the framework is to help understand on the one hand what leads stakeholders at certain estuaries to successfully tackle problems and on the other hand what leads stakeholders at other estuaries to fail to tackle problems adequately. A brief description of the framework follows:

The motivating force for the application of an estuary management process is a **shared problem (and a shared opportunity)** that stakeholders experience. The shared problem leads to a **need for a solution**. Having a shared problem does not automatically lead to the sharing of solutions among stakeholders.

Stakeholders are often in dispute about the solution and this leads to an unwillingness to work together. This unwillingness to work together combined with a lack of process and structures to address problems leads to an inability to solve the problem. As a result the problem persists and no solutions are implemented.

To break out of the cycle of no solutions, stakeholders need to develop a willingness to work together for a solution. Once willingness has been created stakeholders need to establish a forum and leadership that can drive the creation of solutions. This in turn leads to the development of processes and structures that are designed to create solutions to the problem. Once the initial problem has been solved stakeholders can go on to address other problems. Often stakeholders need external support to create the willingness to work together, to establish a forum and leadership and to find solutions.

In order to create willingness to work together and establish a forum and leadership the Programme implemented an estuary management process at the four case study estuaries. The estuary management process is described in the section below:

Estuary Management Process

The estuary management process is a participatory process that has seven major components (see diagram). This approach was adapted from the approach used by the Kruger National Park River Research Programme (Breen *et al.*, 1998). The estuary management process is an ongoing adaptive process that changes and evolves as circumstances change and better

knowledge is acquired. In terms of this process management actions have to be continuously re-designed to ensure that they promote attainment of the shared vision and goals.

Management Agencies

The entire estuary management process depends on a management agency at the centre to facilitate the process, co-ordinate the various actors, learn from implementation and to provide leadership. This agency is appointed by and accountable to stakeholders. It seeks to promote estuary management that accords with



Estuary Management Process used by the Eastern Cape Estuaries Management Programme (adapted from Breen *et al.*, 1998)

policy (at all levels) and with stakeholders intentions.

Vision

An estuary vision reflects the context of the estuary, the values of stakeholders and the aspirations that stakeholders have for their estuary. All stakeholders should participate in the development of the vision so that it reflects the views of as many stakeholders as possible.

Goals

Once a vision has been developed, the goals are identified that promote the attainment of the estuary vision. It is important that each goal should be achievable; and success in achieving the goal should be measurable.

Strategies

Strategies are the different methods that could be used to achieve a goal. Each goal could have alternative strategies or combination of strategies. Potential strategies for goals should be evaluated in order to select the strategy appropriate for the estuary concerned. The evaluation of alternatives is an important step in the estuary management planning process as estuaries are complicated ecosystems and actions can have unexpected consequences. At this stage it may be necessary to make trade-offs as it becomes apparent that particular strategies might achieve one goal, but could detract from the ability to achieve another goal.

Actions

A number of actions are required to implement a strategy. All actions should be realistically implementable. For each action the following should be decided:

- ☛ the responsible organisation or individual;
- ☛ the resources that will be allocated to undertake the action;
- ☛ the geographical area;
- ☛ the time frame of the action; and
- ☛ the intended outcome of the action

This stage of the estuary management process is the most challenging. It is at this point that stakeholders need to move from conceptualising what they

want for their estuary to taking action steps that will bring about the realisation of their vision.

Monitoring

Implementing actions without monitoring the consequences (outcomes) of those actions is meaningless. A monitoring programme should be drawn up to determine whether or not the actions are bringing about the desired outcomes (ie the goals and vision are being achieved).

Auditing

Audits should be undertaken to determine if the goals of estuary management are being met. The results of the audit should be used to review the estuary management vision, goals and strategies and if necessary should be used to amend them in order to address changing circumstances, improved knowledge and success or failure in achieving the goals.

Lesson Learned

Even at this early stage of implementing the process it is possible to draw lessons which may assist achieving practical results. Those that seem important at this stage are presented below. The sequence does not indicate ranking of importance.

- ☛ Understand and appreciate that one is engaging a process that occurs in a particular social, economic and environmental context. Quickly learn about the context, but do not allow this to delay engaging stakeholders in the process.
- ☛ Accept what is uppermost in the mind of stakeholders is their problem. Focus on it and not on issues which, however fundamental, seem remote or irrelevant to stakeholders.
- ☛ Appreciate that the inability to solve the problem may reflect strong tensions between stakeholders and an absence of credible processes and structures for resolution thereof. First steps to a solution lie in easing tensions and creating a 'willingness to work together'. A technical solution cannot be effectively applied in the absence of a willingness to work together.
- ☛ Establishing a shared vision and goals helps to develop constructive relationships. It is particularly effective because it encourages stakeholders to focus on what they would like to see rather than on the problems and tensions they currently

experience. They become solution orientated rather than problem orientated.

- ☛ Identify and work with a local champion(s) who is non-threatening to other stakeholders; promote local leadership.
- ☛ Facilitation and logistical support are essential for at least three reasons: the starting point is frustration and conflict; stakeholders commonly are not aware of the policies, legislation, structures and processes which relate to the management of estuaries; and stakeholders probably do not have the resources necessary to initiate and sustain actions.
- ☛ Jobs and access to resources are uppermost in the minds of marginalised people. This will be their imperative.
- ☛ People may not realise or appreciate the importance of things they do not know. They become frustrated because progress appears to be thwarted, when in fact they are simply not following correct procedures; encourage patience while the procedures are followed.
- ☛ Interface with all spheres of government and ensure that local level activities align with the policies of government.

Annex I: Introduction to the four estuaries

The Bushmans-Kariega Estuary Complex



The upper reaches of the Bushmans estuary.

The Bushmans and Kariega estuaries are in close proximity and can be considered to be one complex in that they fall within the sphere of interest of one local community. Both estuaries fall within the area of jurisdiction of Ndlambe Council. The mouth of the Bushmans estuary is straddled by the Boesmans Rivier Mond settlement on the west bank and the Kenton-on-Sea settlement on the east bank. Kenton-on-Sea

stretches to the Kariega estuary in the east.

Both estuaries are long with the tidal influence reaching as far as 40km up the Bushmans River and 30km up the Kariega River (Day, 1981). The catchments of the two estuaries are affected by agricultural water abstraction and there are two major dams on a tributary of the Kariega River. There is residential development around the mouths of both the Bushmans and Kariega Rivers. Bridges have been built over both estuaries (in close proximity to the mouth). Activities associated with the Bushmans and Kariega estuaries include:

- ☛ recreational activities such as fishing and boating;
- ☛ subsistence fishing; and
- ☛ adjacent residential development.

The estuaries are both very attractive and combined with the recreational opportunities they contribute significantly to the attraction of tourists to Bushmans River Mouth and Kenton-on-Sea and hence to the local economy.

Two of the main problems experienced by both estuaries are:

- ☛ the accelerated deposition and accumulation of sediment which interferes with recreational activities and affects property values.
- ☛ the reduced flow of freshwater into the estuaries, which means that the lower reaches of both estuaries, are largely marine

systems. The Kariega Estuary is regarded by many as an arm of the sea.



The Kowie Estuary (Picture: Anon)

The Kowie Estuary

The lower reaches of the Kowie estuary are located in the heart of Port Alfred, which falls under the jurisdiction of the Ndlambe council. The Kowie River is approximately 70km long and is tidal for the last 21km leading to the sea (Heinecken and Grindley, 1982).

The catchment of the Kowie River is estimated to be between 576 km² and 769 km² in size (Heinecken and Grindley, 1982). Most of the land in the catchment of the Kowie River is privately owned farms.

Over time the mouth and the lower reaches of the estuary have been significantly developed and altered. The mouth of the estuary was canalised in the last century and there is residential and infrastructure development in and around the lower reaches of the estuary. A marina has been constructed on the east side of the estuary, close to the mouth.

Many activities are associated with the Kowie estuary.

- ☛ The estuary is used as a harbour for commercial fishing boats, recreational boats and yachts.
- ☛ Many recreational activities take place in the estuary including fishing, sailing and jet-skiing.
- ☛ Subsistence fishing occurs in the estuary.
- ☛ There are a number of residential developments within and adjacent to the estuary.

The visual attraction of the estuary and the recreational opportunities it provides make it a major tourist attraction and this contributes significantly to the local economy.

The main problem experienced in the estuary is the deposition and accumulation of sediment of marine origin that interferes with the boating activities currently taking place in the estuary. The problem of sedimentation has social and economic consequences for Port Alfred and is a major concern.

The Tyolomnqa Estuary

The Tyolomnqa estuary is situated about 45km west of East London and falls under the jurisdiction of the Buffalo City Municipality. The river is 78km long and is tidal for approximately 16km (INR, 2000b). The estuary is permanently open to the sea.



The Tyolomnqa Estuary

The catchment of the river is 441km² and there are no major dams in the catchment (NRIO, 1987 in INR, 2000b).

There is limited physical development on the east bank of the estuary, near the mouth, which is under private ownership. The

land on the west bank falls within Tribal Trust land and there are a number of settlements, such as Phozi and Sandile villages a short distance from the estuary.

Activities associated with the estuary include:

- ☛ recreational activities such as fishing and boating;
- ☛ subsistence fishing and bait collection; and
- ☛ limited residential development.

The Department of Minerals and Energy has issued a heavy minerals prospecting permit for the land west of the estuary (INR, 2000a). The results of prospecting are not yet known.

The estuary is attractive and its natural heritage has been maintained through a low level of physical development and recreational use.

The main problem is public access. Previously the public could gain access to the estuary via the Tribal Trust land. As this access was increasingly used by

people conducting illegal commercial fishing operations, private property owners on the east bank began paying an annual fee to the communities on the west bank to restrict public access (Brett, 2000).

The Mtentu Estuary

The Mtentu estuary is located in the northeast Pondoland area of the Wild Coast District. It forms part of the northern boundary of the 7720 ha Mkambati Nature Reserve (Abbott *et al.*, 1999). Offshore of the Nature Reserve, from the high water mark extending a distance of six nautical miles seaward and including the Mtentu estuary, is a proclaimed Marine Protected Area. Fishing (including catch and release fishing) in the estuary was prohibited.

The Mtentu estuary is three kilometres long and between fifty and one hundred and fifty metres wide (Day, 1981).

The only development directly in the close vicinity of the estuary is a small permanent campsite that is operated by the Amadiba Coastal Community Development Association (ACCODA) that is used to accommodate tourists to the area.

Activities associated with the estuary include:

- ☞ recreational activities including fishing;
- ☞ subsistence fishing;
- ☞ a catch and release fly-fishing operation is run at the estuary for three months a year (this operation has a special permit); and
- ☞ a tourist horse trail from the Mzamba estuary in the north to the Mtentu estuary is in operation throughout the year.



The Mtentu Estuary

The Mtentu estuary is in an almost pristine condition due to the very low level of human activity associated with the estuary. From an aesthetic perspective, the estuary is perceived to be one of the most 'natural' estuaries in the country and a recent study gave the Mtentu an aesthetic rating of 9.9 out of 10 (Harrison *et al.*, 1998).

The two main problems for the management of the estuary are:

- ☛ the desire of local community members to increase the level of employment in the area by expanding their existing tourism enterprises; and
- ☛ the contradiction between the regulations prohibiting the disturbance of the marine living resources in the estuary on the one hand and the reality that recreational and subsistence fishing takes place on a regular basis.

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Appendix B: Phase II Programme Description

Introduction

The aim of the Eastern Cape Estuaries Management Programme is to promote the effective management and sustainable use of Eastern Cape estuaries. The Programme was initiated in mid 1998 by the Water Research Commission and is managed by the Institute of Natural Resources. It is funded until the end of 2000 by the Water Research Commission, South African Breweries, the Tony and Lisette Lewis Foundation South Africa and AngloGold.

During the past two years the Programme has had considerable success. In order to consolidate and build on this success, the Institute of Natural Resources is seeking funders for an expanded programme over the next three years (2001, 2002 and 2003).

Background

Estuaries of the Eastern Cape coastline are important for several reasons. Firstly, a principal asset of this coastline is the extraordinary scenic beauty of estuaries, beaches and relatively undisturbed landscapes, collectively comprising an enormous potential as a tourism destination. As this region lacks development opportunities in many other sectors, tourism could be developed to create enterprises for previously marginalised people and to sustain the future economy of the region.



Mangroves at the Mngazana Estuary that are harvested by locals for building materials

Secondly, estuaries in this region form a transition zone between subtropical estuaries to the north and temperate estuaries to the south. This, coupled with the important role that estuaries are known to play in sustaining ecological processes in both freshwater and marine ecosystems, renders these environments as especially important. Furthermore, these biologically

productive areas have historically sustained communities through provision of resources for craftwork and as a source of food, and continue to do so today.

Thirdly, although little is known about some of these estuaries relative to those on other coastlines, many are thought to be near-pristine and relatively free from the catchment disturbances which have resulted in the degradation of many of the nation's estuaries.

Programme Description

The aim of the Eastern Cape Estuaries Management Programme is to promote the effective management and sustainable use of Eastern Cape estuaries. In order to achieve this during the next three years the Programme will have four sub-programmes:

- ☛ Local Estuary Management
- ☛ Estuary Management Policy
- ☛ Estuary Management Capacity Building
- ☛ Estuary Management Research

Local Estuary Management: Sub-Programme Description

Background

One of the core focus areas of the Eastern Cape Estuaries

Management Programme over the past two years has been the promotion of local estuary management. To this end the Programme has been facilitating local estuary management processes at the following estuaries:

- ☛ The Kowie estuary;
- ☛ The Bushmans-Kariega estuary complex;



Tyolomnqa Estuaries Stakeholders at a local estuary management workshop

- ☛ The Tyolomnqa estuary; and
- ☛ The Mngazana estuary (Soon to be initiated).

In addition the Programme has been drawing on its experiences to develop local estuary management process guidelines that can be applied to other estuaries

The Local Estuary Management sub-programme will build on the work already done by the Programme in developing estuary management systems and in promoting their application at local level.

Sub-Programme Goals

This Local Estuary Management Sub-programme has two goals:

- ☛ To develop estuary management systems; and
- ☛ To promote the implementation of estuary management systems at a local level.

Sub-Programme Activities

The core sub-programme activities during 2001 to 2003 will be:

- ☛ Estuary Management Facilitation: Continued facilitation of local estuary management at the Kowie, Bushmans-Kariega Complex, Tyolomnqa and Mngazana and initiation of local estuary management processes at two other estuaries in the Eastern Cape;
- ☛ Estuary Management Systems: Further development of the estuary management systems used by the Programme; and
- ☛ Document Programme Experiences: Publication of popular documents and research articles on the local estuary management systems applied and tested by the Programme.

Estuary Management Policy: Sub-Programme Description

Background

During 2000 it was the intention of the Programme to initiate a process of developing policy guidelines for the management of Eastern Cape Estuaries.

Because of the higher than expected management requirements of the Local Estuary Management Process it was decided to postpone the development of policy guidelines.

Sub-Programme Goals

This Estuary Management Policy Sub-programme has one goal:

- ☛ To contribute to the development of Eastern Cape estuaries management policy guidelines to inform the actions of the public and private sector.

Sub-Programme Activities

The core sub-programme activities during 2001 to 2003 will be:

- ☛ Consultation with Government: Consultation with the Provincial Department of Finance, Economic Affairs, Environment and Tourism;
- ☛ Policy Workshop: The hosting of estuary management policy development workshops; and
- ☛ Policy Guidelines: The development of estuary management policy guidelines based on the outcomes of the workshops.

Estuary Management Capacity Building: Sub-Programme Description

Background

Capacity Building has been a major component of the Programme and during the past two years the programme has undertaken a number of capacity building initiatives:

- ☛ The development of a Programme website that provides information on the progress of the programme and estuary management in general;



- ☛ The quarterly publication of an Eastern Cape Estuaries Management Programme newsletter that provides information on the progress of the programme and estuary management in general;
- ☛ A two-day training workshop on the application of Strategic Environmental Assessment to Estuary Management;
- ☛ During the facilitation of local estuary management processes the programme has used interactive techniques designed to maximise the participation of stakeholders and encourage their active involvement in estuary management;
- ☛ The financial and supervisory support of Masters students (Two from the Centre for Environment and Development at University of Natal Pietermaritzburg and one at Rhodes University {Financial Support Only}); and
- ☛ The involvement of Eastern Cape based researchers in the implementation of the Programme.

Sub-Programme Goals

This Estuary Management Capacity Building sub-programme has three goals:

- ☛ To build the capacity of estuary management forums (and stakeholder groups that are likely to form forums) to participate in the management of their estuaries;
- ☛ To build the capacity of previously disadvantaged individuals and groups in the implementation of local estuary management systems and estuary management research; and
- ☛ To build the capacity of Eastern Cape based researchers to implement local estuary management systems.

Sub-Programme Activities

The core sub-programme activities during 2001 to 2003 are

- ☛ Website: Continued updating and expansion of the programme website;

- ☛ Newsletter: Publication of a quarterly programme newsletter that is distributed to a wider audience, ranging from provincial politicians to local estuary stakeholders;
- ☛ Annual Training Workshop: The hosting of yearly provincial training workshops (each year will focus on a specific theme in estuary management). The participation of previously disadvantaged individuals and groups will be actively promoted;
- ☛ Ad-hoc Training Workshops: The hosting of ad-hoc training workshops with communities and organisations involved in local estuary management processes supported by the programme. The need for and focus of the workshops will be identified during the local estuary management planning processes;
- ☛ Student Support: The financial and supervisory support of masters students researching estuary management;
- ☛ Involvement of Researchers: The involvement and employment of Eastern Cape based researchers in the implementation of the Programme.
- ☛ Interactive Workshop Techniques: The continued use and further development of interactive workshop techniques which promote active involvement by stakeholders in estuary management

Estuary Management Research: Sub-Programme Description

Background

During the past year the Eastern Cape Estuaries Management Programme has developed an Estuaries Management Research proposal which aims to strengthen management through researching issues of concern to the application of policy and legislation. To develop the proposal and implement the research programme the Institute conceptualised an eight-step process.

To facilitate the identification of needs by managers and users the Programme hosted a Needs Analysis Workshop in Port Elizabeth during February 2000. Estuary managers, estuary users and researchers attended the workshop. During the workshop strategic research needs for the facilitation of improved estuary management were identified.

Following the workshop the Institute of Natural Resources, in consultation with workshop participants and experts, developed an extensive Research Programme Proposal.

Sub-Programme Goals

The Estuary Management Research Sub-Programme has three goals:

- ☛ To facilitate and enhance participatory management for the sustainable use of Eastern Cape of South African estuaries;
- ☛ To foster collaboration amongst estuary researchers and managers; and
- ☛ To establish a culture of integrated estuary management research.

Sub-Programme Activities

In order to achieve these goals the sub-programme will initiate a number of research projects that will aim to achieve the following objectives:

- ☛ promote co-operative governance systems that are appropriate, easily understood and implementable;
- ☛ promote co-operative management (and integrated planning) systems that are appropriate, easily understood and implementable;
- ☛ promote the adoption by appropriate authorities of guidelines for a strategy for the protection of the national heritage of estuary biodiversity;
- ☛ promote the adoption by appropriate authorities of protocols for defining levels of sustainable use;
- ☛ promote the adoption by appropriate authorities of protocols for monitoring estuaries to promote compliance with policies and legislation at whatever level is appropriate;
- ☛ promote the adoption by appropriate authorities of protocols for the rehabilitation of estuaries;
- ☛ construct a sustainable knowledge management system that is implemented and used; and

- ✦ construct a self-sustaining capacity building programme that is implemented.

Beneficiaries of the Programme

The intended beneficiaries of the programme are:

- ✦ Department of Environmental Affairs and Tourism (Marine and Coastal Management): The Programme will assist the implementation of the policies and legislation administered by the Department by developing estuary management systems and promoting estuary management research that supports these policies and laws. In addition the Department will benefit from the improved capacity of local stakeholders.
- ✦ Provincial parliamentarians: The Programme will provide parliamentarians with insight and understanding into estuary management issues.
- ✦ Eastern Cape Department of Economic Affairs, Environment and Tourism: The Programme will assist the implementation of the policies and legislation administered by the Department by developing estuary management systems and promoting estuary management research that supports these policies and laws. In addition the Department will benefit from the improved capacity of local stakeholders. The Programme will also actively involve the Department in the implementation of the Programme and provide policy advice to the Department.
- ✦ Department of Water Affairs and Forestry: The Programme will assist the implementation of the policies and legislation administered by the Department by developing estuary management systems and promoting estuary management research that supports these policies and laws. In addition the Department will benefit from the improved capacity of local stakeholders. In addition the provincial office of the Department will be actively involved in the Programme.
- ✦ Municipalities: The Programme will develop systems that allow the incorporation of estuary management into municipal planning processes. Where the Programme is facilitating local estuary management processes the involvement of the relevant municipalities will be actively encouraged. The Programme will

provide municipalities with insight and understanding into estuary management issues.

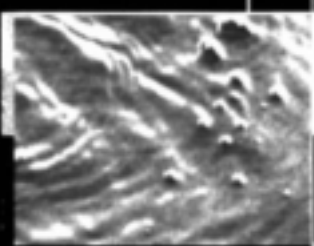
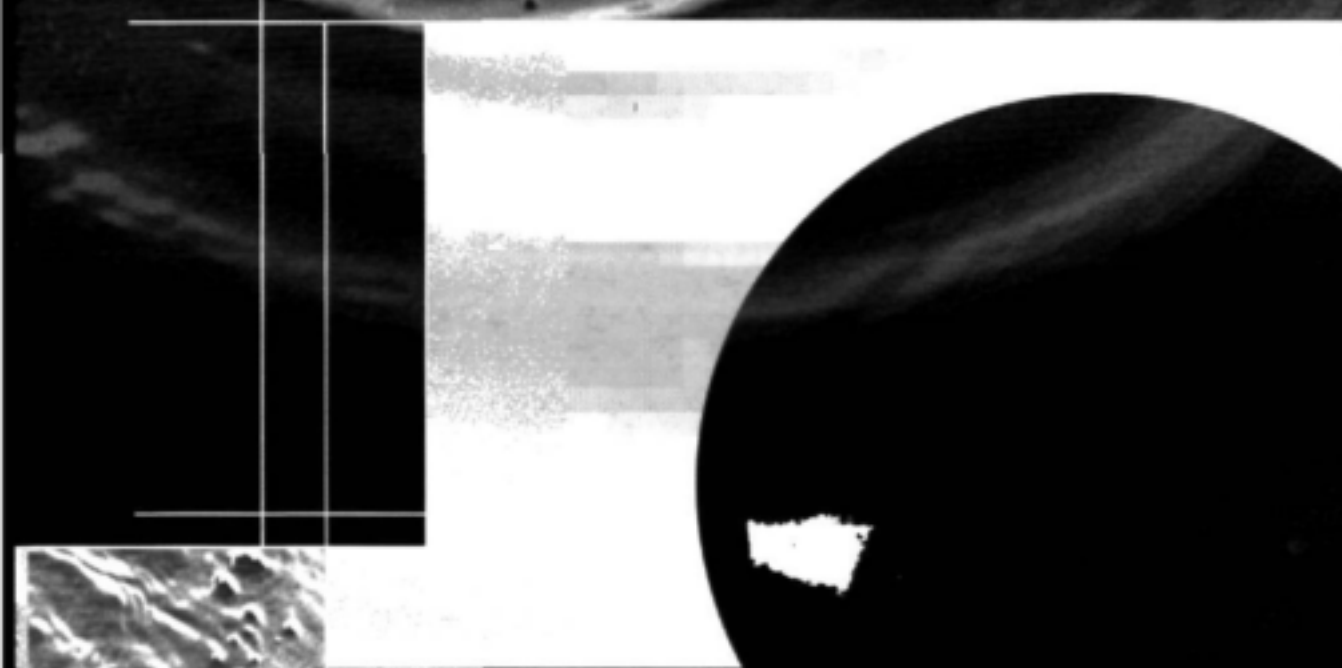
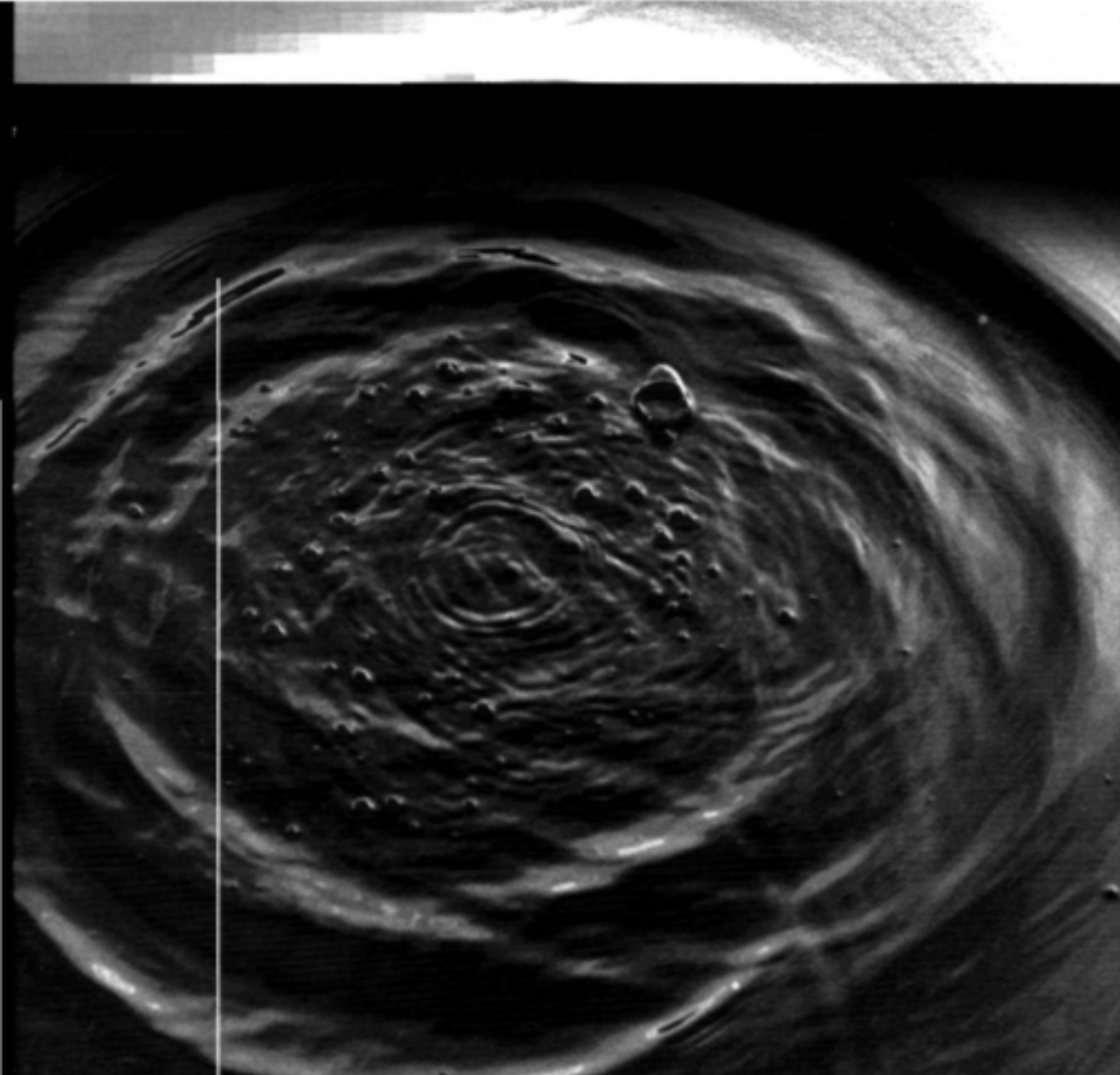
- ☛ Estuary Management Forums (and stakeholder groupings that are likely to form forums): The Programme will develop estuary management systems that will support the aims and objectives of estuary forums. Active participation of the forums in the Programme will be encouraged. The Programme will provide forum members with insight and understanding into estuary management issues.
- ☛ Researchers: The Programme will provide research opportunities. The establishment of local estuary management processes will enable researchers to engage management issues more effectively. The Programme will generate publications that deal with conceptual estuary management issues.
- ☛ Previously disadvantaged individuals and groups: The Programme will provide research opportunities, ensure their participation in the Programme and build their capacity to contribute to estuary management.
- ☛ Graduate students at the Centre for Environment and Development: The Programme will provide research opportunities for these students and contribute to specialisation courses of the Masters programme.

Programme Management Team

The INR programme management team consists of eight members:

- ☛ Duncan Hay: Duncan is a director of the INR. He has a MSc in Zoology from the University of Natal and a postgraduate diploma from the University of Cambridge. Duncan has overall responsibility for the Programme.
- ☛ Professor Charles Breen: Charles has recently retired as CEO of the INR, but is still actively involved in a number of projects. Charles advises the management of the Programme and is actively involved in the facilitation of estuary management plans. He will also be playing a role in the estuary management research programme.

- ☛ Margaret McKenzie: Margaret is a Project Manager at the INR. She has a MSc in Environment and Development. Margaret is the project manager of the Programme.
- ☛ Doh Ngcobo: Doh is a Project Manager at the INR. She is completing a Masters in Environment and Development part-time. Doh is actively involved in the implementation of the Programme.
- ☛ Nhlanhla Sihlophe: Nhlanhla is a Project Manager at the INR. He is currently completing a Masters thesis in Hydrology. Nhlanhla is actively involved in the implementation of the Programme.
- ☛ Magamase Ntlabati: Magamase is currently completing her masters in environment and development and will become involved in the implementation of the Programme in April 2001. Magamase has been doing part-time work for the Programme over the last few months
- ☛ Gail Knox-Davies: Gail is the programme administrator at the INR. She holds a South African Institute of Management diploma in Business Management. Gail is responsible for the administration of the Programme and the Programme website.
- ☛ Amanda Xaba: Amanda is an administrative assistant at the INR. She provides administrative support to the Programme.



Water Research Commission
PO Box 824, Pretoria, 0001, South Africa
Tel: +27 12 330 0340, Fax: +27 12 331 2565
Web: <http://www.wrc.org.za>

