DISCUSSION PAPER:
WETLANDS IN AGRICULTURE

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Table of Contents

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EXECUTIVE SUMMARY

Wetlands are sensitive and vital systems in our environment, and yet they are decreasing and degrading at an alarming rate. Agriculture is considered the principal cause of wetland loss worldwide. Not only do we need to protect or conserve wetlands to secure our water resources for our own future and well-being, but we are also bound by national and international commitments to do so. A body of international, regional and national policies and treaties exists that relates to the conservation of water ecosystems. South Africa also has policies and acts protecting our wetlands, but overlaps and gaps regarding wetland legislation exist, and shared responsibilities between different government departments lead to ineffective implementation. The need for clear guidelines regarding the sustainable use of wetlands in agriculture is vital for their conservation in South Africa. The Department of Agriculture identified this need and, together with the Water Research Commission, made funding available for this project.

This discussion paper serves as a starting point to address conservation and protection of wetlands in the agricultural sector. In future it is hoped that this document will form part of a larger interdepartmental discussion group, whereby wetlands will be optimally managed and protected. Relevant discussion points were obtained from literature studies and workshops.

ABBREVIATIONS

ARC-ISCW	Agricultural Research Council – Institute for Soil, Climate and Water
CARA	Conservation of Agricultural Resources Act (Act No 43 of 1983)
CASP	Comprehensive Agricultural Support Programme
CBD	Convention on Biological Diversity
CCAW	Coordinating Company for Agriculture and Water
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DEAT	Department of Environmental Affairs and Tourism
DME	Department of Minerals and Energy
DoA	Department of Agriculture
DWAF	Department of Water Affairs and Forestry
EIA	Environmental Impact Assessment
EMPR	Environmental Management Programme Report
EPWP	Expanded Public Works Programme
FAO	United Nations Food and Agriculture Organization
GDACE	Gauteng Department of Agriculture, Conservation and Environment
IUCN	International Union for Conservation of Nature
IWMI	International Water Management Institute
LAAC	Licence Assessment Advisory Committee
LRAD	Land Redistribution for Agricultural Development
MoA	Memorandum of Agreement
NEAP	National Environmental Action Plan
NEPAD	New Partnership for Africa's Development
NEMA	National Environmental Management Act (Act No 107 of 1998)
NWA	National Water Act (Act No 36 of 1998)
NWI	National Wetland Indaba
OECD	Organisation for Economic Co-operation and Development
REMDEC	Regional Environmental Management Development Committee
SADC	Southern African Development Community
SANParks	South African National Parks
SUPAR	Sustainable Utilization and Protection of Agricultural Resources Bill
UNCHE	United Nations Conference on the Human Environment
UNEP	United Nations Environment Programme
WHO	World Health Organization
WSSD	World Summit on Sustainable Development

1 BACKGROUND

The vision of drafting a positioning paper for the Department of Agriculture (DoA) on wetlands developed a few years ago. The DoA approved funding for the Agricultural Research Council – Institute for Soil, Climate and Water (ARC-ISCW) to host a "Wetlands and Agriculture" seminar on 19 April 2005, to support the drafting of a wetlands positioning paper for South Africa. During this workshop, an action plan was discussed for the development of a DoA positioning paper on wetlands in agriculture. In a follow-up meeting on 18 November 2005, the DoA indicated that they were committed to supporting a number of wetland related research projects, including the positioning paper. The DoA approved funding for the project '*Discussion Paper on Wetlands in Agriculture'* in August 2006, with the Water Research Commission as co-funders.

The aim of this document is to raise discussion points that could be addressed and further investigated. This discussion document is only the first phase of the management process that will hopefully contribute to meaningful discussions and understanding about wetlands in agriculture, and to the development of adequate and effective wetland management and protection under the new 'Sustainable Utilization and Protection of Agricultural Resources (SUPAR) Bill' that will supersede the current 'Conservation of Agricultural Resource Act' (CARA).

The 'Discussion Paper on Wetlands in Agriculture' is a first step (phase 1) of a multi-step process towards the development of a cross-sector policy for wetland management (Appendix I, Section 4, Planning process for development of policy for wetland management). Phase 1 includes a) analysis of the current situation regarding wetlands and agriculture in South Africa as well as internationally, and b) consultations and workshops with key stakeholders, such as national departments, NGOs, commercial and subsistence farmers, scientific institutions and others.

This document has two parts: i) the core document includes a short background, problem statement, and mainly focuses on discussion points that are a result of a literature study as well as workshop discussions; ii) the appendix contains all the relevant literature, policies, mandates and references on which these discussion points are based. The core document often refers to the appendix, and in doing so, this document is more streamlined, and hopefully easier to read.

1.1 Introduction

Wetlands are sensitive and vital systems in our environment, and yet they are decreasing and degrading at an alarming rate. Agriculture is considered the principal cause of wetland loss worldwide. It has been estimated that South Africa has already lost between 35-50% of all

wetlands. In a water-scarce country such as South Africa, wetlands play a crucial role in managing our limited water resources, through purification, storage, recharging of groundwater and stream flow regulation.

The need for clear guidelines regarding the sustainable use of wetlands in agriculture is vital for their conservation in South Africa. Overlaps and gaps regarding wetland legislation exist, and shared responsibilities between different government departments lead to ineffective implementation. The DoA identified this need and, together with the Water Research Commission, made funding available for this project.

1.2 Problem statement

Despite policies and acts, wetlands are not always specifically addressed. Overlaps and gaps regarding wetland legislation exist, and shared responsibilities between the different departments lead to ineffective implementation. Over the past ten years the government of South Africa has made many changes regarding national policies and acts (such as the National Water Act) in an effort to reduce the inequalities and underdevelopment. The reality is that many people continue to be directly dependent on natural ecosystems such as wetlands for their water and much of their food (DWAF, 2006). The need for clear guidelines regarding sustainable use of wetlands in agriculture is vital for the conservation of wetlands in South Africa.

1.3 What is a wetland?

The generic term '*wetland'* is used worldwide and includes specific ecosystems such as bogs, coastal lakes, estuaries, fens, floodplains, mangroves, marshes, mires, moors, pans, peatlands, seeps, sloughs, springs, swamps, vlei and wet meadows (Mays, 1996; DWAF, 2005). Whatever the local name given to wetlands, the driving force of all wetlands is the interplay between land and water, and the consequent characteristics that reflect both (Cowan, 1999). Any part of the landscape where water accumulates for long enough and often enough to influence the plants, animals and soils occurring in that area, is a wetland (DWAF, 2005). Wetlands comprise approximately 6% ($8.5\ km^2 \times 10^3$) of the world's land surface and are found in every climate from the tropics to the frozen tundra (Mays, 1996). Several definitions for wetland exist. Two of the most common wetland definitions used in South Africa are the National Water Act (NWA) and the Ramsar definition:

National Water Act, Act No 36 of 1998:

> *"Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil."*

South Africa, being a contracting party to Ramsar, also uses the definition accepted by the convention. Article 1.1 of the convention defines wetlands as (Cowan, 1999; Koester, 1989):

> *"areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters."*

Internationally, the Ramsar definition of wetlands is the most widely quoted. Probably the second most-quoted definition of wetland is that of the US Fish and Wildlife Services (USFWS) (Adam, 2001):

> *"Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For the purpose of this classification wetlands must have one or more of the following attributes: i) at least periodically the land supports predominantly hydrophytes; ii) the substrate is predominantly undrained hydric soil; and iii) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.'*

For the purpose of this document, the definition of the NWA (Act No 36 of 1998) will be used.

1.4 The relevance of wetlands

South Africa is a dry country with an average annual rainfall of about 497 mm, which is far below the world average of 860 mm, while evaporation is comparatively high. With a high population growth and increasing demand on its water, South African water resources are threatened by increasing pressures. Water resources management has impacted on nearly all water bodies, and there are few rivers in southern Africa that have not been manipulated by storage dams or by water transfer schemes, over-exploitation, degradation or pollution (Cowan, 1999; Davies, O'Keefe & Snaddon, 1993). South Africa is, in global terms, a water-scarce country, and is on the threshold of the internationally used definition of water stress. Based on the present trends in water use and population growth, it is estimated that South Africa will reach the limits of its available fresh water resources before the year 2050. Currently there is already less water per

person available than in countries considered to be much drier, such as Namibia and Botswana (Thompson, 2006).

When evaluating South Africa's water resources, it is necessary to recognize the unity and interaction of the water cycle: evaporation, clouds and rainfall are linked to groundwater, rivers, lakes, wetlands and the sea (Thompson, 2006). Wetlands are therefore an integral part of the water cycle, and their functions, attributes and values cannot be overestimated. Wetlands are among the most productive ecosystems in the world, sustaining habitats containing high diversity and large numbers of endemic and threatened species. They perform valuable ecological functions; they act as a water store and regulate runoff; they function as nutrient filters and/or sinks by filtering of suspended solids as well as being an effective transformer (i.e. primary oxidation/reduction systems on the landscape) of N, P and C (Mays, 1996; DWAF, 2005); they directly support millions of people and provide goods and services to the world outside the wetland (Cowan, 1999). Apart from these important environmental services, wetlands are also valuable in terms of recreation, scientific, educational and cultural values (Adam, 2001).

Understanding that wetlands are a special type of landscape, that they are widespread and that they provide both environmental and cultural benefits to society, it becomes clear that wetland conservation is essential. Despite the benefits provided by wetlands, South Africa lacks a planning tool for effective wetland conservation. With heavy losses to a small but extremely important landscape type it is imperative that a strategy to conserve wetlands be developed. According to Cowan (1999), a policy and its implementation strategy is a means of planning for wetland conservation that will enable South Africa to meet both its national objectives and international obligations.

1.5 Wetland losses

1.5.1 International wetland losses

Despite the importance of wetlands and our dependence thereon, more than half the world's wetlands have disappeared since 1900 (www.ramsar.org; www.unesco.org). Agriculture is considered the principal cause of wetland loss worldwide. By 1985 it was estimated that 56-65% of available wetland had been drained for intensive agriculture in Europe and North America, 27% in Asia, 6% in South America and 2% in Africa (Finlayson & Davidson, 1999). While agriculture is directly responsible for wetland losses, one of the major underlying factors resulting in wetland loss is population growth. High population numbers increase the pressure on water resources through utilization of undeveloped land for settlements and agriculture, higher agricultural and industrial production and infrastructure expansion. Wetlands, being so rich in biodiversity are

destroyed for this very reason through over-utilization of wetland products, functions and attributes (Shine & De Klemm, 1999).

1.5.2 African wetland losses

Much of Africa lies within the arid and semi-arid climate, with the available fresh water unevenly distributed. This makes wetlands in Africa an important source of water and nutrients, and in some cases, wetlands are the sole provider of water and grazing for entire communities. In a study done by Schuyt (2005) on four wetlands, a total of 16 different goods and services were identified by local populations. These goods and services will be lost if African wetlands are lost, with a profound impact on local and subsistence farmers.

Factors that put increased pressures on wetlands are population growth, rising poverty and economic stress, which could be intensified by drought. A further complication is that benefits of wetlands are not shared by those who own the property. Private landowners could derive higher returns from wetland conversion, while the public benefit of the wetland and therefore the cost of the conversion is carried by the local populations (Schuyt, 2005). Wetland losses are directly linked to biodiversity loss. In Sub-Saharan Africa, processes that are responsible for wetland and biodiversity loss include destruction and fragmentation of habitat, desertification, introduction of alien species, and harvesting and hunting of selected individual wild species (Perrings, 2000).

In southern Africa, a review of wetland inventories indicated the extent of wetland resources in ten countries in the region. Loss figures are given for two areas in Natal – the Tugela Basin, where over 90% of the wetland resources have been lost in parts of the basin; and the Mfolozi catchment (10,000 km^2), where 58% of the original wetland area (502 km^2) has been lost (Moser, Prentice & Frazier, 1996).

1.5.3 South African wetland losses

South Africa, like the rest of the developing world, is undergoing fast population growth with increasing economic aspirations. Apart from the high population growth, the changes in political power led to the need for rapid development, increasing the pressure on our natural resources. These conditions often result in the destruction of the very natural resources on which our sustained development depends (Cowan, 1999). It has been estimated that in South Africa between 35 – 50% of all wetlands have been destroyed (DWAF, 2005; SANBI, 2006). The main reasons are drainage of wetlands for crops and pastures, poorly managed burning and grazing

that results in donga erosion, planting of alien trees in wetlands, mining, pollution and urban development (DWAF, 2005).

Wetlands are a small but extremely important part of the South African landscape, and their conservation has been sorely neglected, probably due to factors such as poor knowledge on the extent of our wetlands; lack of planning tools for their conservation and; inability to meet our international commitment in terms of wetland conservation (Cowan, 1999).

A lot of international research on wetlands has been done, especially in the United States of America, but much of this research is not applicable to South African conditions. South Africa's largest biome is climax grasses, a condition that is found in few other countries in the world. International vegetation indicators are heavily biased towards woody vegetation and mangrove swamps and do not reflect grassland vegetation (Lizamore, 2005).

1.6 Agriculture

The major cause of wetland loss around the world continues to be conversion to agricultural use. Urban and industrial development is also a major cause of wetland draining, but in total this land is relatively small in comparison to agricultural conversion (Mitsch & Gosselink, 2000).

Agricultural land in South Africa is mainly used for grazing. A variety of cash crops are also cultivated, including maize, wheat, sugar cane, oats and sunflower (Kotze, 2001). Agriculture is a generator of wealth and constitutes one of the key industries in the country's economy. Not only is it of concern to the farmer, but also urban areas and secondary manufacturing and thus has a profound impact on the entire economy.

South Africa has undergone enormous economic, social and political change since 1994. The South African economy, including agriculture, is increasingly integrated in world markets with about one-third of agricultural production exported. It is among the world's leading exporters of agro-food products as such wine, fresh fruit and sugar. At the same time, South African agriculture is highly dualistic with a small number of commercial operations run predominantly by white farmers and large numbers of subsistence farms run by black farmers. Continuing the land reform process, providing adjustment assistance, and trade development are the most important agricultural policy challenges (OECD, 2006).

Between 40 and 50% of South Africa's population can be classified as living in poverty. About 50% of the population of South Africa lives in rural areas where the majority (65 – 72%) of the

poor are found. Agriculture forms the basis of food security for these people (DoA, 2006; May, 1998; Machethe, 2004). On the basis of Census '96 results, the number of employed people in the labour force in the ten major sectors of the economy was 9.1 million, of whom 10% worked in the agriculture, hunting, forestry and fishing sector. Agriculture is the dominant economic activity of poor countries. The sector provides employment for 70% to 80% of the labour force in low-income developing countries and between 40% and 50% in middle-income countries. It accounts for 35% to 40% of gross domestic product (GDP) in low-income countries.

In comparison with the commercial farming sector, the land under cultivation in the former homelands is very small. Of the 2.4 million households in the former homeland areas, 1.4 million engaged in crop farming. Of these, one in every two households (50%) cultivated an area of less than one hectare, 22% cultivated an area of between one and two hectares, while relatively few (1%) had 10 hectares or more under cultivation (Stats SA, 2000).

2 POINTS FOR FURTHER DISCUSSION

The following discussion points are summarized from literature studies including national and international policies and legislation. They are linked to the relevant appendix sections in which more information and references are available.

a Water scarcity in South Africa

South Africa has a low rainfall, and a large part of the country lies in arid and semi-arid regions. Water is thus a scarce resource and needs to be managed carefully. Wetlands play an important part in management of the water resources, and the importance thereof cannot be underestimated. Wetlands are thus essential for the sustainable and continuous water supply in South Africa. Protection of wetlands through law and conservation practices is therefore not a luxury, but a necessity in which we have no choice. The rest of the discussion points are based on this realisation.

b Wetlands under threat

Possible threats that could impact on wetlands in South Africa include the following direct threats: agriculture; mining; poor land management such as overgrazing and wrong burning practices resulting in degradation of the catchment and wetlands; introduction of alien species; urban development; and pollution. Indirect threats include: increased population growth; poverty; and ignorance and unawareness. Correct management of wetlands will have to address these wider issues as well.

c Subsistence farming

The socio-economic situation in South Africa has an important influence on wetlands (Appendix section 2.1, Complex socio-ecological systems). A large number of people in South Africa are either directly or indirectly dependent on wetlands for water, grazing for cattle, agriculture, wetland material (reeds for making crafts etc.), making conservation of wetlands more critical, but at the same time increasing the pressure on these resources. In developed countries, commercial agriculture is subjected to many regulations and often monitored. In Africa, however, the issue of agriculture and wetlands is very different. Subsistence farming is the livelihood of many people, and in many cases the only means of survival. In South Africa subsistence farming is mostly practised on small areas (<1 ha each), of which the cumulative effect becomes very profound. Poverty and high population growth complicates this situation, with about 50% of the population

considered poor, many of which are subsistence farmers. Subsistence farming in wetlands can therefore not be prohibited, but wise use principles need to be promoted to use wetlands sustainably.

d Inadequate wetland protection

Wetlands in South Africa are protected by international obligations (such as Ramsar, UNCHE and UNEP) as well as national policies and law (Appendix section 1, Mandates, obligations and responsibilities). Despite these mandates, treaties, policies and legislation, wetland protection often seems to be inadequate. There are many gaps and overlaps in South African wetland legislation (Appendix section 1.4, Comparison of international and national policy documents), of which CARA addresses agricultural activities most directly, but the Free State Wetland Policy seems to be the most comprehensive overall wetland policy in South Africa, comparing very well with issues addressed in international wetland policies.

Significant wetland loss still occurs in South Africa, and land users are often not aware of implications of wetland conversion, or unaware of the extent or existence of wetlands. CARA is the main agricultural act, addressing most of the agricultural issues. This act should be able to protect wetlands in the agricultural sector, but there are many gaps and problems in CARA that makes this act ineffective. During the workshop discussions (Appendix 3.2, Gaps in legislation regarding wetlands), the following reasons were given for poor implementation of wetland legislation:

- Generally unclear wetland legislation.
- There is a serious gap in CARA regarding communally owned land, where some land-use regulations are not easily enforceable.
- Subsistence farming is also not addressed adequately.
- Unclear issues in CARA, for example the definition for cultivation could also include mining, when only referring to 'mechanically disturbing of soil surface'.
- Peat mining is an issue that needs to be addressed.
- Cumulative effect of activities, such as trout dams, small woodlots, subsistence farming etc. should be addressed in the legislation as well as EIA process.
- Non-point source pollution not addressed in legislation.
- Mandatory wetland audits/delineation prior to any development or change of land use.
- Protection of total water system: surface, subsurface and interlinkage of water systems affecting recharge.

Very few international policies and acts deal exclusively with agriculture in wetlands, it rather being a comprehensive policy that includes any activity that impacts on wetlands (Appendix section 2, Policies).

e *Wetlands must be managed on catchment level*

Wetlands cannot be managed in isolation (Appendix section 2, Policies), and wetlands as a complex socio-economic system must not be underestimated (Appendix section 2.1, Complex socio-ecological systems). The entire catchment needs to be addressed in wetland conservation. Impacts on the catchment, such as overgrazing and erosion, will have an adverse effect on the wetland. Many of these impacts can be absorbed by wetlands, but only up to a certain point, after which it could lose its functions due to overloading with sediment, nutrients, or lack of water. Integrated wetland management is thus essential. This includes stakeholder involvement, research and monitoring, rehabilitation, legal enforcement, institutional integration, coordination between different government departments, and provincial and local departments. Co-operative governance is important when managing complex wetland systems. (Appendix section 2.2.1, Integrated conservation).

f *Co-operative governance*

The importance of co-operative governance was stressed during the stakeholder workshop (Appendix section 3.1, Co-operative Governance). The concept of an 'interdepartmental body', or 'ombudsman', or a legal advisor was strongly suggested during all discussions. In this organization, all departmental mandates should be recognized and supported by all departments. Most delegates felt strongly about a non-aligned leadership for successful co-operative governance.

International literature also recognizes co-operative governance as a prerequisite for successful wetland conservation and management (Shine & De Klemm, 1999; Handmer, Norton & Dovers 2001; Thompson, 2006; Appendix section 2.2.1, Integrated conservation).

g *Intergovernmental wetland position paper*

Gaps in wetland legislation were recognized and the need for an intergovernmental wetland position paper was expressed during workshop discussions (Appendix section 3.1, Co-operative Governance). DWAF is currently part of the wetland position paper steering committee, but DEAT still needs to get on board officially. For this reason a MoA needs to be developed as soon as clear mandates have been identified.

h Incentives

Legislation alone is often inadequate to prevent biodiversity loss. New approaches are increasingly turning towards the use of incentives to encourage people to change their behaviour (Appendix section 2.2.3, Incentives and disincentives). Delegates attending the Stakeholder Workshop (Appendix section 3.3, Implementation) felt that conservation could only be successful if people are rewarded for conserving resources. In countries such as the United States of America, landowners get incentives for not cultivating sensitive areas. In South Africa no such system exists, and people often have no choice but to utilize all available resources, including wetlands, since it would be their only income. It was felt that incentives in the form of a tax rebate or government subsidies could improve the conservation of wetlands.

However, incentives do not always seem to be the answer. According to Forster (1991) it remains a problem that in most taxation systems the incentives for converting wetlands into other uses outweigh those available for conservation of wetlands (Appendix section 2.2.3, Incentives and disincentives). Another complication of incentives in South Africa is subsistence farming, and the monitoring and implementation of an incentive and disincentive system. There are fewer incentives that could be implemented in rural subsistence communities, for instance, tax breaks would not be realistic, and direct payments to restore degraded habitats would be difficult to administer, time consuming and labour intensive. There would be plenty of room for misuse, corruption or poor implementation. Incentives for these communities will be in the form of service-orientated (e.g. awareness raising and skills training) or social incentives (e.g. improving quality of life through tenure reform). A wise use of wetlands programme could potentially be a very powerful method of wetland conservation in rural communities.

i Wise Use of Wetlands

The Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar, Iran, 1971) calls upon Contracting Parties to formulate and implement their planning to achieve the 'wise use' of wetlands (Davis, 1993). South Africa ratified the convention in 1975, committing itself to the conservation and wise use of wetlands (Appendix section 1.1, Ramsar Convention (1971).

Many countries have already made a significant effort to develop guidelines and policies on wise use of wetlands; however, it is not possible to give a single answer on how to achieve wise use of wetlands. Wise use under one particular circumstance or in one particular wetland may not be wise use in another, or it may change over time. Wise use is therefore collaboration between the

community (in terms of focusing on the way of thinking, planning, organizing, verifying and adjusting) and the actual use itself (Davis, 1993).

As an example of an effective and integrated programme, the wise use of wetland programme in Uganda is considered to be very successful, although it has highlighted the complexity of achieving national wise use, and recognizes the long-term nature of this programme. In contrast with most approaches, which focus upon individual sites, Uganda developed the capacity of national government and local administrations to administer wise use of wetlands throughout the country (Appendix section 2.3.4, Uganda).

j *Monitoring*

Monitoring and implementation of policies and acts is vital to wetland management. This issue was stressed during the workshop discussions (Appendix section 3.3, Implementation), and also features strongly in international policies (Appendix section 1.4, Comparison of international and national policy documents). In South Africa monitoring is only directly addressed in the Environmental Conservation Act and the Free State Wetland Policy.

k *Public awareness, participation and capacity building*

Community involvement and awareness is important for wetland conservation, protection and wise use. This issue is strongly addressed in international policies (Appendix section 1.4, Comparison of international and national policy documents) but in South Africa, only the Free State Wetland Policy refers to public awareness and participation. During the workshop discussions the need for public awareness and capacity building was also recognized (Appendix section 3.3, Implementation).

l *Wetland management: integration of economic, social and environmental aspects*

International literature stresses the point of integrated wetland management (Appendix section 2, Policies), and Cowan (1999) also strongly indicates the importance thereof in the South African context (Appendix section 2.4, South African policy and legislation).

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APPENDIX

1 MANDATES, OBLIGATIONS AND RESPONSIBILITIES

Internationally there is an increasing understanding that water resources can only be successfully managed if the natural, social, economic and political environments are fully taken into consideration (Thompson, 2006). This could be achieved by following an approach of integrated water resource management (IWRM). In South Africa the need for interdepartmental management of our water resources has recently been emphasized. The interrelationship and complexity of the different water resource management functions makes it necessary to follow an integrated approach. The need for this is explicitly acknowledged in the national water policy (NWP) and the preamble to the NWA. Also in the recently published discussion paper 'Cross-sector policy objectives for conserving South Africa's inland water biodiversity' (Roux, Nel, MacKay & Ashton, 2006), it has been emphasized that the conservation of our water resources is a cross-sector responsibility.

1.1 National and international obligations[1]

Not only do we need to protect or conserve wetlands to secure our water resources for our own future and well being, but we are also bound by national and international commitments to do so. A body of international, regional and national policies and treaties exists that relate to the conservation of water ecosystems. These treaties and policies reflect certain societal norms and values, and the nations that subscribe to them are bound to giving effect to their principles and objectives (Roux *et al*., 2006). South Africa has ratified the following international conventions and agreements:

1.1.1 Ramsar Convention (1971)

The Convention on Wetlands of International Importance especially as Waterfowl Habitat (commonly referred to as the Ramsar Convention), signed in Ramsar, Iran, in 1971, is an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. There are presently 153 Contracting Parties to the Convention, with 1634 wetland sites, totalling 145.6 million hectares, designated for inclusion in the Ramsar List of Wetlands of International Importance (www.ramsar.org, December 2006). The mission of the Ramsar Convention is *"the*

[1] Mainly adapted from Roux *et al*. (2006)

conservation and wise use of wetlands by national action and international cooperation as a means to achieving sustainable development throughout the world".

The International Union of Conservation of Nature and Natural Resources (IUCN) in Switzerland administers the convention. The obligations of countries that have ratified the Ramsar Convention are the following:

- Designate suitable wetlands within its territory for inclusion in a List of Wetlands of International Importance;
- Formulate and implement its planning so as to promote the conservation of the wetlands included in the List, and as far as possible the wise use of wetland in their territory;
- Promote the conservation of wetlands and waterfowl by establishing nature reserves on wetlands, whether they are included in the List or not, and provide adequately for their wardening;
- Consult with each other about implementing obligations arising from the Convention especially in the case of a wetland that extends over the territories of more than one Contracting Party, or where a water system is shared by Contracting Parties.

The Ramsar Convention is unique in that it remains the only global convention the objective of which is to protect and conserve a particular type of ecosystem and the flora and fauna (especially waterfowl) dependent upon it (Koester, 1989).

1.1.2 UNCHE and UNEP (1972)

The first United Nations Conference on the Human Environment (UNCHE, 5-16 June 1972, Stockholm, Sweden) led to the adoption of a number of regional and international agreements, including the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Delegates to the Stockholm UNCHE meeting also resolved to establish the United Nations Environment Programme (UNEP). As a key part of this mandate, UNEP administers a number of international instruments related to biodiversity, including the Convention on Biological Diversity (CBD), CITES, the Convention on Migratory Species, the Framework Convention on Climate Change, and the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities.

As a member of the United Nations, South Africa's responsibilities in relation to UNCHE are to:

- Commemorate 5 June each year as World Environment Day and to undertake activities on that day publicly to reaffirm their concern for the preservation and enhancement of the human environment;

- Accept the responsibility to achieve the environmental goal '*to defend and improve the human environment for present and future generations – a goal to be pursued together with, and in harmony with, the establishment and fundamental goals of peace and of world-wide economic and social development*'.

1.1.3 Brundtland Report (1987)

In 1987 the World Commission on Environment and Development (Brundtland Commission) concluded that economic development must become less ecologically destructive. In its landmark report, entitled 'Our Common Future', the Commission noted that 'humanity has the ability to make development sustainable – to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs.' It also called for 'a new era of environmentally sound economic development.'

1.1.4 Earth Summit (1992)

During the United Nations Conference on Sustainable Development (3-14 June 1992, Rio de Janeiro, Brazil), also called the 'Earth Summit', a strategy of sustainable development was agreed upon. The water chapter (Chapter 18) of Agenda 21 requires countries '*to make certain that adequate supplies of water of good quality are maintained for the entire population of this planet, while preserving the hydrological, biological and chemical functions of ecosystems, adapting human activities within the capacity limits of nature*'. This chapter provides guidance for the protection of water resources, water quality and aquatic ecosystems, and sets targets including:

- Protection and conservation of water resources on a sustainable basis;
- Water pollution prevention and control;
- Establishment of biological, health, physical and chemical quality criteria for all water resources; and
- Adoption of an integrated approach to environmentally sustainable management of water resources, including the protection of aquatic ecosystems and freshwater living resources.

1.1.5 Convention on Biological Diversity (1992)

The Convention on Biological Diversity (CBD) (www.biodiv.org), came into force in 1994, and was ratified by South Africa in 1996, and is currently ratified by 188 Contracting Parties. The Convention has three main objectives, namely:

- The conservation of biological diversity;

- The sustainable use of biological resources; and
- The fair and equitable sharing of benefits arising from the use of genetic resources.

The CBD calls on the Contracting Parties to:

- Conserve representative samples of all major ecosystem types;
- Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sector or cross-sector plans, programmes and policies;
- Integrate consideration of the conservation and sustainable use of biological resources into national decision-making; and
- Encourage cooperation between its governmental authorities and its private sector in developing methods for sustainable uses of biological resources.

1.1.6 Millennium Summit (2000)

The UN Millennium Summit (6-8 September 2000, New York, USA) adopted the Millennium Development Goals (MDGs). The MDGs have been universally accepted as a framework for measuring progress in development at country (national) level. Eight goals were identified, of which MDG 7 deals explicitly with biodiversity, and wise use of biological resources:

Goal 7 - Ensure environmental sustainability:

- Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources;
- Halve, by 2015, the proportion of people without sustainable access to safe drinking water;
- Have achieved, by 2020, a significant improvement in the lives of at least 100 million slum dwellers.

1.1.7 World Summit on Sustainable Development (2002)

The World Summit on Sustainable Development (WSSD, 26 August – 4 September 2002, Johannesburg, South Africa) adopted the Johannesburg Plan of Implementation and the Johannesburg Declaration. The Plan of Implementation states that: '*Human activities are having an increasing impact on the integrity of ecosystems that provide essential resources and services for human well-being and economic activities. Managing the natural resources base in a sustainable manner is essential for sustainable development. In this regard, to reverse the current trend in natural resource degradation as soon as possible, it is necessary to implement strategies which should include targets adopted at the national and, where appropriate, regional*

levels to protect ecosystems ant to achieve integrated management of land, water and living resources, while strengthening regional, national and local capacities'.

Chapter 4 of the WSSD Plan of Implementation acknowledges that biodiversity, which plays a critical role in overall sustainable development and poverty eradication, is essential to our planet, human well-being and to the livelihoods and cultural integrity of all people. However, it also recognized that biodiversity is currently being lost at unprecedented rates due to human activities. This trend can only be reversed if the local people benefit directly from the conservation and sustainable use of biological diversity in their countries, in particular in countries of origin of genetic resources, in accordance with Article 15 of the CBD.

1.1.8 Paris Declaration on Biodiversity (2005)

The International Conference on Biodiversity Science and Governance met in January 2005 in Paris, France. The main points include:

- Biodiversity is a natural heritage an a vital resources for all humankind;
- Biodiversity is being destroyed irreversibly by human activities;
- A major effort is needed to discover, understand, conserve and sustainable use biodiversity (Roux *et al*., 2006).

1.2 Regional and national obligations[2]

Regional and national policies and commitments also bind South Africa to certain rules and regulations regarding conservation of water resources and wetlands. Relevant regional initiatives that are applicable to South Africa include the following:

1.2.1 New Partnership for Africa's Development

The New Partnership for Africa's Development (NEPAD, 2001) is the vision of African leaders to eradicate poverty through sustainable growth and development, and provides a strategy that will influence future development and management of Africa's natural resources. NEPAD provides the overarching trans-national strategy that will influence future development and management of Africa's natural resources base. It has been recognised that a healthy and productive environment is a prerequisite for the success of NEPAD, together with the need to systematically address and sustain ecosystems, biodiversity and wildlife.

[2] Mainly adapted from Roux *et al*., (2006)

Six areas have been identified:

- Combating land degradation, drought and desertification;
- Conserving Africa's wetlands;
- Preventing and controlling invasive alien species;
- Conservation and sustainable use of coastal and marine resources;
- Combating climate change in Africa; and
- Cross-border conservation and management of natural resources.

1.2.2 Southern African Development Community (SADC)

The Southern African Development Community (SADC) was formed in Lusaka, Zambia, in 1980. SADC aspires to achieve development and economic growth, alleviate poverty, enhance the standard and quality of life of the people of southern Africa, and support socially disadvantaged groups through regional integration. Article 5(g) of the SADC Treaty aims to achieve the sustainable utilization of natural resources and to effectively protect the environment (SADC, 1992)

In recognition of the importance of a coordinated approach to utilization and preservation of water, SADC member states signed the Protocol on Shared Watercourse Systems at the 1995 SADC Summit in South Africa. The main thrust of the Protocol, which is a legally binding document, is to ensure equitable sharing of water as well as efficient conservation of the region's scarce water resources. South Africa's obligations under the SADC treaty include: close cooperation with regard to the study and execution of all projects, the exchange of available information; sharing of a watercourse system in an equitable manner; and the respect of rules of general and customary international law related to the subject.

1.2.3 National Water Act

The National Water Act (Act No 36 of 1998 - NWA) is the principal legal instrument relating to water resources management in South Africa and contains comprehensive provisions for the protection, use, development, conservation, management and control of South Africa's water resources. Wetlands are included in this act under the term 'watercourse'. 'Watercourse' is defined as: "*a) a river or spring; b) a natural channel in which water flows regularly or intermittently; c) a wetland, lake or dam into which, or from which, water flows; and d) any collection of water which the Minister may, by notice in the* Gazette*, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks".*

1.2.4 National Environmental Management Act

The National Environmental Management Act (Act No 107 of 1998 – NEMA) describes and clarifies a series of basic National Environmental Management Principles that must guide decision-making about the environment and provide for cooperative governance with respect to the environment. The only direct reference to wetlands in NEMA, is section 2 (r): "*Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure*".

1.2.5 White Paper on Conservation and Sustainable Use of South Africa's Biological Diversity

The White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity was published in 1997 after a comprehensive public consultation process. This paper provides the mission, vision and principles that inform, guide and provide a context to South Africa's policy and strategy. Six goals have been formulated, each of which in turn comprises a number of relevant policy objectives and strategies that are required to attain these objectives. In addition, the implementation of the policy, including the roles of key players, the legislative framework, the institutional changes required, funding, and priority actions are all addressed in the White Paper.

1.2.6 The National Environmental Management: Protected Areas Act (2003)

Protected areas are seen as an extremely important tool for achieving biodiversity objectives, since these often provide greater security for conservation-worthy land than the agreements or land use limitations provided for in the National Environmental Management: Biodiversity Act (see below). The National Environmental Management: Protected Areas Act (Act No 57 of 2003 – Protected Areas Act) creates a framework and management system for all protected areas in South Africa, as well as establishing the South African National Parks (SANParks) as a statutory board. The system of protected areas in South Africa consists of:

- Special nature reserves, national parks, nature reserves and protected environments;
- World Heritage Sites;
- Marine protected areas in terms of the Marine Living Resources Act;
- Specially protected forest areas, forest nature reserves and forest wilderness areas declared in terms of the National Forests Act;
- Mountain catchment areas declared in terms of the Mountain Catchment Areas Act.

1.2.7 Conservation of Agricultural Resources Act (CARA)

The Conservation of Agricultural Resources Act (Act No 43 of 1983) includes the use and protection of land, soil, wetlands and vegetation and the control of weeds and invader plants. This is the only legislation that is directly aimed at conservation of wetlands in agriculture. This act, which is administered by the Department of Agriculture, came into operation on 1 June 1984. The following regulations are applicable:

Regulation 7 (3) of the present act specifically provides for the "utilisation and protection of vleis, marches, water sponges and watercourse". It reads: "except on authority of a written permission by the Executive Officer, no land user shall

a) drain or cultivate any vlei, marsh or water sponge or portion thereof on his farm unit,
b) or cultivate any land on his farm unit within the flood area of a watercourse, or within 10m horizontally outside the flood area of a watercourse".

Regulation 8 (5) states '*no land user shall remove or alter any obstruction in the natural flow pattern of run off water on his farm unit, if such removal or alteration will result in excessive soil loss due to erosion…*'

Regulation 12 (1) states '*Except in authority of a written permission by the executive officer, no land user shall burn any veld on his farm unit'*.

There are many grey areas in this act, some of the words are not clearly defined, such as 'drain' or 'vlei, marsh or water sponge'; there is no specific provision to control grazing in vleis, and yet this can be a major reason for the degradation of wetlands (Begg, 1986).

1.3 Provincial legislation

Some provinces have also developed their own wetland policies or guidelines:

1.3.1 Gauteng Wetland Guideline Document

This guideline has been developed by GDACE to serve as a guiding policy that could provide clear direction with regard to urban development and wetlands. This includes avoidance and mitigation of impacts as well as making decisions on those listed activities that relate to agriculture and to provide guidance through the extension work undertaken by GDACE agricultural officials. This guidelines falls under the authority of section 24 of the Constitution of South Africa, NEMA, NWA and CARA (GDACE, 2005).

1.3.2 Free State Wetland Policy

The purpose of the Free State wetland policy is to have wetland conservation streamlined into the daily business of the provincial government. It aims to provide those responsible for administering relevant provincial government activities with guidelines and processes to ensure that wetlands are managed in accordance with the principles of sustainable development (Collins, 2005).

1.3.3 Interim Guidelines for Development Activities that may affect Wetlands, KwaZulu-Natal

This document focuses on urban development and wetlands in KwaZulu-Natal, and it was deemed necessary considering the high rate of urbanization in KwaZulu-Natal and the important role that wetlands play in enhancing the quality of urban environments if they are well integrated into planning and management of urban areas (Kotze, Thornhill & Felton, 2002). This document is still in the draft format.

1.4 Comparison of international and national policy documents

The major points of some international wetland policies are compared in the table below. This could give an indication of important issues addressed by other countries, as well as the gaps that exist in our own legislation. The following international policies are compared:

New Zealand:	New Zealand Wetlands Management Policy. Commission for the Environment, 1986.
Turkey:	2003-2008 National Wetlands Strategy for Turkey. December 2002;
Uganda:	National Policy for the Conservation and Management of Wetland Resources. Ministry of Natural Resources, The Republic of Uganda, 1995;
Nepal:	National Wetlands Policy 2003. His Majesty's Government of Nepal, Ministry of Forests and Soil Conservation;
Ghana:	Managing Ghana's Wetlands: A national Wetland Conservation Strategy. Ministry of Lands and Forestry, 1999;
Canada:	The Canadian Federal Government Policy on Wetland Conservation;
Australia:	The Wetland Policy of the Commonwealth Government of Australia, January 1997;
Trinidad and Tobago:	National Policy and Programmes on Wetland Conservation for Trinidad and Tobago. National Wetlands Committee, January 2002.

Wetlands are directly (e.g. CARA) and indirectly (e.g. Constitution of SA) addressed in several South African policies or acts. Some overlaps and gaps exist because there is no clear-cut policy that directly addresses all the relevant issues regarding wetlands. The table below could indicate some of the gaps and overlaps for a better understanding of South African wetland legislation. The following national and provincial policies, acts and guidelines will be compared:

Constitution:	Constitution of the Republic of South Africa (Act No 108 of 1996)
CARA:	Conservation of Agricultural Resources Act (Act No 43 of 1983)
ECA:	Environmental Conservation Act (Act No 73 of 1989)
Mpumalanga NCA:	Mpumalanga Nature Conservation Act, 1998 (Act No 10 of 1998)
NEMA:	National Environmental Management Act (Act No 107 of 1998)
NWA:	National Water Act (Act No 36 of 1998)
Free State Policy:	Collins, N., 2005. Free State Wetland Policy. Department of Tourism, Environmental and Economic Affairs, Bloemfontein.
Gauteng Guidelines:	Gauteng Wetlands Guideline Document, Version 1.4 of 2005, GDACE Aquatic Services Unit.

	INTERNATIONAL POLICIES								SOUTH AFRICAN POLICIES AND GUIDELINES							
	New Zealand	Turkey	Uganda	Nepal	Ghana	Canada	Australia	Trinidad & Tobago	Constitution	CARA, RSA	ECA	Mpumalanga NCA	NEMA	NWA	Free State Policy	Gauteng Guideline
Conservation, preservation and **protection**	Y		Y	Y	Y	Y	Y	Y	Sec 24b	Y				Sec 2		Y
Prevent **drainage** of wetlands			Y	Y						Reg 7 (3) R1048						Y
Prevent **cultivation** in a wetland										Reg 7(3) R1048						Y
Wetland **Inventory**	Y	Y	Y	Y		Y		Y							Y	
Monitoring & evaluation (EIA) & enforcement		Y	Y			Y		Y			Sec 7 R1183				Y	
Raise public **awareness,** communication and education	Y	Y	Y	Y	Y		Y	Y							Y	
Include wetland conservation in formal **education system**								Y								
Empowerment of community to take responsibility & support mechanisms							Y	Y							Y	
Participation of **local communities** & cultural values; Local knowledge, capacity building		Y		Y	Y		Y	Y					Sec 2 (4)		Y	
Private sector **participation**		Y		Y			Y									
Appropriate **policies,** legislation and institutional arrangements		Y	Y	Y	Y	Y	Y	Y								Y
Institutional **capacity building** & training		Y	Y		Y		Y	Y								
Implementation and coordination of policies							Y								Y	
Intergovernmental coordination of policies													Sec 2 (4)		Y	

	INTERNATIONAL POLICIES								SOUTH AFRICAN POLICIES AND GUIDELINES							
	New Zealand	Turkey	Uganda	Nepal	Ghana	Canada	Australia	Trinidad & Tobago	Constitution	CARA, RSA	ECA	Mpumalanga NCA	NEMA	NWA	Free State Policy	Gauteng Guideline
Information centre & institutional structures				Y	Y			Y					Sec 31			
Wise use & sustainable development		Y	Y	Y	Y				Sec 24biii				Sec 2(3)		Y	Y
Environmentally sound **management**			Y	Y		Y	Y									
Restoration and **rehabilitation**		Y	Y	Y	Y		Y	Y		Reg 13 R1048					Y	Y
Address **alien species**; prevention, control and management		Y		Y						Y						
Control and prohibition of the selling or dispersing of **weeds**										Reg 5 Reg 19 R1048		Sec 80				
Promote **international** actions, such as designation of new Ramsar sites		Y	Y	Y	Y		Y						Sec 2 (4)		Y	
Management planning and monitoring of **Ramsar** sites		Y					Y									
Incentives (disincentives) and financial support for conservation and wise use of wetlands		Y		Y	Y										Y	
Address **tenure** and use			Y	Y	Y											
Research			Y		Y		Y	Y							Y	
Address **impacts outside wetlands** boundaries, e.g. buffer	Y			Y		Y				Y						
Integrated **catchment management**															Y	
Address **pollution and ecological degradation,** regulate of underground water extraction				Y					Sec 24bi			Sec 67	Sec 2(4)	Sec 19		Y

	INTERNATIONAL POLICES								SOUTH AFRICAN POLICIES AND GUIDELINES							
	New Zealand	Turkey	Uganda	Nepal	Ghana	Canada	Australia	Trinidad & Tobago	Constitution	CARA, RSA	ECA	Mpumalanga NCA	NEMA	NWA	Free State Policy	Gauteng Guideline
Polluter pays					Y								Sec 2 (4) Sec 28			Y
Networking					Y	Y	Y									
Conservation partnerships & shared vision between NGOs and different government dept & **integrated approach**						Y	Y	Y							Y	
Monitor & regulate trade in **products derived from wetlands**							Y									
Management programme for **publicly owned wetlands**								Y								
Reduce/eliminate policies with a **negative** effect on wetlands								Y								
The right to an **environment that is not harmful** to health or well-being									Sec 24a				Sec 2 (4)	Sec 2		
Conservation of wetlands and control methods, relate to utilisation and **protection of wetlands**									Sec 24bii	Reg 6					Y	Y
Protection of cultivated land against **erosion**										Reg 4						Y
Protection of water against **pollution** on account of farming practices										Reg 6				Sec 19		
Protection of **vegetation in a wetland** and 10m buffer										Reg 7 (1) R1048				Sec 36 & 128		

	INTERNATIONAL POLICES								SOUTH AFRICAN POLICIES AND GUIDELINES							
	New Zealand	Turkey	Uganda	Nepal	Ghana	Canada	Australia	Trinidad & Tobago	Constitution	CARA, RSA	ECA	Mpumalanga NCA	NEMA	NWA	Free State Policy	Gauteng Guideline
Authorisation needed for **cultivation of virgin soil** and land with slope										Reg 6(2)						
Regulation of **diversion of run-off**										Reg 8(1) R1048				Sec 21(c)		Y
Altering beds, banks, course or characteristics of a water course														Sec 21(i)		Y
Limitation of wetland use within a **buffer** of flood line										R1048 1/10 yr						Y (10m buffer)
Implementing provincial **policies**															Y	
Special attention for **sensitive areas** such as wetlands													Sec 2 (4)			
Water use guidelines and criteria														Sec 21 & 22		
Stream flow reduction activities														Sec 36		
Off site mitigation not a substitute for natural wetlands															Y	

2 POLICIES

Competition for ownership or access to wetlands and their products exists between different individuals, sectoral interests or administration and across political boundaries. It is therefore necessary to develop an effective, scientifically based framework to ensure that the country's water resources are protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner (Shine & De Klemm, 1999; Thompson, 2006). National wetland policies provide a mechanism for delivering this complex objective. A well designed policy making process should make it possible for the needs, interests and duties of local populations user groups at all levels of government and non-government organizations to be articulated, compared and examined for compatibility with wetland conservation and sustainable use objectives (Shine & De Klemm, 1999).

Wetlands are vulnerable ecosystems and many activities impact directly or indirectly on them, and the side-effects of these non-wetland activities could have far reaching results. Each of these activities is subject to specific legislation and regulated by different government departments (Shine & De Klemm, 1999). This stresses the fact that wetlands cannot be managed in isolation, but an integrated management system is needed, which will involve co-operative governance (Thompson, 2006).

2.1 Complex socio-ecological systems

In many frameworks people are treated as separate, instead of an integral part of ecosystems. Environmental problems are often product driven and viewed in isolation with little recognition of the wider context. A product-driven approach has meant that freshwater systems, forests and agricultural land have been conventionally managed to achieve growth in outputs. This approach had been at the expense of other goods and services such as water quality and quantity and carbon storage. In particular, the management of freshwater systems for human utility has generally followed unsustainable routes. Likewise, many supply-driven approaches to water shortages have been unsuccessful because the underlying cause of the problem is related to a far wider range of social and natural resource issues such as unsustainable water and land-use practices upstream in the catchment. These, in turn, are often related to wider political and socio-economic factors. The CBD has endorsed the ecosystems approach and defines it as follows: 'An ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way'. This approach recognizes that humans are an integral part of most ecosystems. The foundation of this approach

is designed to achieve a balance between peoples' needs and long-term sustainability. But, as the above definition suggests it is about more than that. An ecosystem approach essentially represents systems thinking which recognizes that a system is made up of complex and interconnected parts (Pollard, 2003).

In summary, the key characteristics and principles of this approach can be summarized as follows (Pollard, 2003):

- People are an integral part of ecosystems;
- It recognizes interconnectedness of ecosystems and peoples relationship;
- It is about achieving a balance (needs vs. sustainability) and hence may involve tradeoffs;
- It is an integrated approach (vertical and horizontal);
- It must be flexible and adaptive;
- Strives for management that maintains linkages (between ecosystems such as land water linkages and between peoples needs and systems);
- Seeks to maintain future options whilst acknowledging risks and uncertainties;
- Seeks to reduce vulnerability in order to maintain resilience.

2.2 International wetland policies and legislation

The effectiveness of legislation varies greatly between countries. Legislation may be fragmented, incomplete or outdated, implementing regulations may be issued late (or not at all) or establish techniques and standards which do not respond to actual threats; and, as is often the case, enforcement may be weak or non-existent (Shine & De Klemm, 1999). Internationally, much experience has been gained on wetland management and wetland policies, from which we can learn valuable lessons.

2.2.1 Integrated conservation

Some international experiences of integrated conservation and development projects have been summarized by Handmer *et al*. (2001), and the following characteristics have been identified:

1. Large areas: The protection of wetlands should extend to areas adjacent to the wetland, including a suitable buffer zone in order to absorb cumulative impacts (Schulte-Hostedde, Walters, Powell & Shrubsole, 2006). Areas should be large enough to include the habitats and ecosystems needed for a functional wetland (Handmer *et al*., 2001; Shine & De Klemm, 1999).

2. Cores and corridors: Sensitive areas, such as wetlands, could receive high protection status to form core conservation sites. Ideally such sites should be linked by corridors of natural or restored wild cover to permit migration and adaptation to global change (Handmer *et al*., 2001). By creating a network of wetland systems, the link between wetlands and water quality is strengthened (Schulte-Hostedde *et al*., 2006).
3. Leadership and management: Appropriate authority is needed for effective wetland management, to provide direction where resource conflicts may arise. Management may come from national, provincial or local government, NGOs, or the community itself. Stakeholders negotiating, planning and implementing agreed activities can be shared co-operatively between public and private entities, or be fully community based (Handmer *et al*., 2001; Schulte-Hostedde *et al*., 2006; Shine & De Klemm, 1999).
4. Involvement of local communities: Involvement of local communities in conservation efforts is crucial to the success of the initiative. This can be achieved through including local roles in management arrangements; capacity building; suitable incentives need to be created that motivate individuals and organizations to be involved; ensure access to information for all stakeholder groups; mechanisms must be established that allow for changes in management plans to reflect changing realities (Handmer *et al*., 2001).
5. Sustainable and wise use of wetlands: Measures or guidelines are needed to determine the sustainable and wise use of wetlands (Shine & De Klemm, 1999).
6. Economic sustainability: Appropriate incentives are needed to make optimal use of local resources. Application of sustainable technologies, combined with a system for sharing the costs and benefits equitably could increase the economic sustainability of wetland use (Handmer *et al*., 2001; Shine & De Klemm, 1999).
7. Full involvement of stakeholders: All parties who can affect or benefit from the resources have the opportunity to be fully involved in the planning and management. Local capacity building is especially important.
8. Social acceptance: Any proposals for changes in the way of life and livelihoods of the residents and local people, including indigenous communities, need to be acceptable to them.
9. Solid and comprehensive information: All stakeholders have access to critical information prepared to facilitate planning and management. GIS technology is used to help stakeholders envision their region and its distinctive features clearly.
10. Research and monitoring: Research and inquiries focus on people and environmental interactions, the development of innovative methods for the managing of natural resources, and the long-term monitoring of environmental factors and the impact of management practices.

11. Use of knowledge: Scientific, local and traditional knowledge is employed in planning and management activities. Biology, anthropology, economics, engineering and other related fields are all tapped.
12. Adaptive management: Bioregional programmes operate on an experimental basis, drawing lessons from real-world experience, and responding appropriately.
13. Restoration and rehabilitation: Restoration is pursued where the viability of some habitats or ecological functions has been impaired through excessive or inappropriate use.
14. Co-operative skills development: Communities and public and private organizations together locate and mobilize the skills, knowledge and information needed to manage the area.
15. Effective monitoring and enforcement: The absence of effective monitoring and enforcement procedures, meaningful sanctions and adequate remedies (Shine & De Klemm, 1999).
16. Institutional integration: Alliances with other institutions and with local organizations are forged to close gaps, minimize overlap and make management and investment in the region more efficient (Handmer *et al*., 2001).
17. Ineffective policy and implementation: Clear policy and institutional capacity, especially at local level is needed in order to avoid confusion (Schulte-Hostedde *et al*., 2006; Shine & De Klemm, 1999; Handmer *et al*., 2001).
18. International co-operation: Because some ecosystems cross international boundaries and, in some cases, extend globally along animal migration routes, international co-operation may be required (Handmer *et al*., 2001).

2.2.2 Flaws in wetland programmes

According to the WWF (1992), some of the major flaws of wetlands programmes can be resolved by addressing the following issues:

- Conflict between development and wetlands protection;
- Failure to consider both land use and hydrology in wetland protection;
- Inadequate maps and other data;
- Inadequate tracking of permits and changes in wetlands;
- Lack of wetlands protection policies for public land;
- Lack of policies for public infrastructure planning and development;
- Limited scope of regulatory programmes;
- Duplication and inconsistencies in permitting;
- Limited budgets, staff and expertise;
- Failure to identify sites with restoration potential;

- Lack of acquisition priorities.

2.2.3 Incentives and disincentives

Legislation alone is often inadequate to prevent biodiversity loss. New approaches are increasingly turning towards the use of incentives to encourage people to change their behaviour. People behave rationally by making decisions on an assessment of costs and benefits, and the use of incentives by a government in an important way in which people can be motivated to conserve and use biodiversity sustainably. Some incentives are direct, and can be either financial, such as providing subsidies to restore threatened habitat, or in kind, such as providing nursery plants to traditional healers. Other incentives are indirect, and may be fiscal (e.g. tax breaks for funding conservation projects), service-orientated (e.g. awareness raising and skills training), voluntary (e.g. private nature reserves), or social (e.g. improving quality of life through tenure reform). In contrast, disincentives encourage desirable behaviour. A pollution tax motivates businesses to reduce pollution. Some incentives, also called 'perverse incentives', actively encourage the depletion of biodiversity (e.g. drought relief subsidies) (DEAT, 1997).

Incentives for conserving biodiversity already exist in South Africa, and are applied with varying success. For example, conservancies, private nature reserves and South African Natural Heritage Sites accord recognition to landowners taking action to conserve biodiversity. Similarly, education programmes and extension services provide motivational incentives to conserve biodiversity. Conservation strategies determine priorities and provide direction, and various tax concessions, aid and compensation schemes provide financial incentives for conservation. However, the effectiveness of these mechanisms is not known, and there are many 'perverse incentives' in place, which may counter such efforts (DEAT, 1997).

Tax incentives is one method that could be applied to encourage conservation of biodiversity and protection of wetlands. However, there are mixed opinions of whether a tax system will contribute to the conservation of wetlands or encourage their conversion to agriculture or other uses (Forster, 1991). A questionnaire study done by Forster (1991) showed that the general feeling is that tax systems tend to favour the conversion rather than conservation of wetlands. In Morocco there is an agricultural tax, the purpose of which is to promote agricultural production, and in many other countries, such as Canada, there is an in-built bias in the tax structure towards the use of land for agriculture. In the Netherlands the tax structure is unfavourable towards unused lands and in the Philippines landowners can be penalised if their land is not cultivated. Some countries, such as Greece and Sweden, place no additional tax burden on uncultivated land. A number of common law countries such as New Zealand and the United Kingdom, have a type of

land taxation based on the theoretical rental value of the land, which often differs from the actual value of the land (Forster, 1991).

An entirely different financial device is the use of disincentives on the use of unfavourable action to wetland conservation. This may be in the form of refusal of agricultural subsidies (UK) when these subsidies are likely to be applied to damaging activities to the environment. In the USA a farmer who utilizes highly erodible soils, or drains wetlands, could lose his eligibility to a wide range of federal agricultural support payments (Forster, 1991).

Nonetheless it remains a problem that in most taxation systems the incentives for converting wetlands into other uses outweigh those available for their conservation.

In South Africa, one of the most important considerations in pushing for the use of incentives is the low level of compliance with regulations. Many farmers are unaware of their legal obligations and limitations, and often feel that monitoring and enforcement of regulations is extremely low, and application for certain procedures of land use is tedious and complicated.

2.2.4 Legal framework

Whatever the nature of the enabling legislation, wetland-related legal frameworks should have four major components:

- An **organizational structure** that defines and implements policy, is vested with sufficient authority and powers to control wetland-related activities and coordinates related management efforts;
- The requirement to establish a **knowledge base** that can be used to collect, interpret and disseminate information;
- Establishment of **prevention, restoration and incentive measures** to support wetland conservation and wise use throughout national territory;
- Establishment of a **compliance scheme** to monitor, enforce and promote observance of legislative provisions (Shine & De Klemm, 1999).

2.2.5 Lessons learned from the United States of America

The policy of the USA for over 120 years was to drain wetlands. In the early 1970s, interest in wetland protection increased significantly as scientists began to realise the values of these ecosystems. A national wetland policy was developed in 1987, resulting in the ‘no net loss’ that became a cornerstone of wetland conservation in the USA in the early 1990s (Mitsch &

Gosselink, 2000). However, wetland management is still complicated by conflicting interests of different land-users and government departments. Some laws are contradictory to wetland protection, by making wetland draining mandatory for agricultural practices and infrastructure development or public health purposes. Alternatively legislation may provide for subsidies or tax incentives for drainage, infilling or conversion. Incentives for seemingly wetland-unrelated activities, such as irrigation, flood insurance, intensive forestry and agriculture or highway construction, ultimately impact on wetlands leading to their destruction or degradation (Shine & De Klemm, 1999).

Some problem areas in the USA include:

- Uncertainties about legal defensibility of outright permit denials under state law, which results in the approval of all permits regarding wetland utilization.
- Inadequate field enforcement resources in either the federal or state programmes to provide sufficient regulatory oversight of private activities.
- The mitigation policy has driven permit applicants to distraction. The acceptability of enhancement of a marginal wetland area to mitigate for loss of an area of better productivity, or creation of an artificial wetland to compensate for loss of natural systems, has been controversial (Forster, 1991).

2.3 African wetland policies and legislation

The main threats to biodiversity and wetland loss in Sub-Saharan Africa are the increase in demand due to population and economic growth; the lack of markets for many of the environmental consequences of economic activity; the adverse effects of inappropriate economic and social policies; and a distribution of assets that often leaves people with little choice but to overexploit the natural resources they use. An important part of the difficult policy environment in Sub-Saharan Africa is the combination of low income, primary product dependence and indebtedness (Perrings & Lovette, 2000).

There are four main elements in a policy for biodiversity conservation: a regulatory regime to protect key species, habitats and ecological services; an appropriate set of property rights in natural resources; a compensation mechanism; and a supporting structure of incentives and disincentives to induce the desired response (Perrings & Lovette, 2000).

2.3.1 Markets

In Africa the focus point of development is economic growth through opening of markets and privatisation of publicly-owned natural resources. Perrings and Lovette (2000) argued that the opening of markets would have largely beneficial environmental consequences. The removal of market price distortions, such as agricultural or energy subsidies, could improve the efficiency of economic activity and reduce the impact of that activity on the environment. Also improving the security of land tenure by assigning private property or use rights promotes investment in land conservation and environmental stewardship. Moreover, greater macro-economic stability encourages investment, and persuades resource users to take a longer-term view of their decisions. But the environmental effects of liberalization are ambiguous. On the positive side, trade liberalization may stimulate environmental protection by lowering costs. But there are costs as well as benefits to expanding trade. If it stimulates demand for the products of environmentally damaging activities, then it follows that it will increase environmental damage (Perrings & Lovette, 2000).

2.3.2 Protected areas

Protected areas are generally blocks of land where rivers (and wetlands) often form the boundaries of these areas, rather than being the focus of the protected areas. Most conservation strategies begin and end with the designation of protected areas. Protected areas have become entrenched as the main mechanism for conservation of all biological resources. The preservation of wild resources through designation of protected areas may be appropriate in some cases. But designation of protected areas can also be both inefficient and inequitable. The establishment of protected areas may, for example, lead to loss of traditional access rights and employment opportunities. In such cases it may lead to increasing rather than decreasing pressure on the resource as users resort to illegal harvesting and encroachment (Perrings & Lovette, 2000). Biodiversity conservation in many developing countries has been complicated by the fact that the local benefits of conservation are less than the local opportunity costs. The local community can do better exploiting the resources than by conserving them. Partly in response to this, many programmes attempt to combine the creation of employment and poverty eradication with conservation programmes (Perrings & Lovette, 2000).

2.3.3 Ghana

Since independence, successive governments in Ghana have attempted to promote development by designing national development plans. The need was identified to integrate economic, social, environmental and political concerns into development planning and policy. A policy guideline

was developed that recognizes fundamental relationships among environmental degradation, the distribution of human population, economic activity, and the pattern and scale of human development. The guideline also recognizes that policy failure at local and regional levels inevitably means policy failure at the national level. This is important because the success of national socio-economic and spatial policies depends on complex interrelationships and activities at the local level carried out voluntarily by local communities and the general population as a whole (Anderson, 1998).

To promote change that addresses these issues, the Government of Ghana put into place a strong local government law to enforce integrated development at grassroots level. This is popularly known as the 'local government law on decentralization'. Decentralization is being implemented to increase local participation in development and management. The experience so far indicated that:

- National guidelines based on indigenous political philosophy are indispensable to the development of rural economics;
- Rural resources should be considered in the context of ecological opportunities and constraints.

In the early 1990s the National Environmental Action Plan of Ghana (NEAP), was launched. NEAP identified the following research topics to fill gaps in the data on wetland ecosystems:

- Inventory of wetlands;
- Physical, chemical and biological character of wetlands;
- Socio-economic and cultural importance of the wetlands; and
- Current wetland management practices.

The most important research objective, according to NEAP, was to identify and select wetlands for protection (Anderson, 1998).

Wetland conservation in Ghana focuses mainly on the conservation of water resources and biodiversity. Water conservation involves damming rivers for more effective use of water for agricultural, industrial and domestic purposes.

An important conclusion of various studies in the relationship between environmental and development is that environmental, social and economic considerations need to be integrated in development activities. The continual changes in government structure and roles of integrated planning agencies in Ghana have created inconsistencies in policy design and implementation. Problems include an overemphasis on sectoral policies, with little or no integration; monolithic

and over-centralized planning for development; and lack of feedback from the local level. In formulating broad polices, policymakers have given very little attention to local-level development that meets the aspirations of local people. The result is that communities feel alienated from development priorities, and local people end up implementing sector policies that do not "belong" to them. A meaningful integrated policy would carefully take into account the interplay of economic, social, environmental and political factors (Anderson, 1998).

2.3.4 Uganda

The wise use of wetland programme in Uganda is considered to be very successful, but it has highlighted the complexity of achieving national wise use, and recognizes the long-term nature of this programme. In contrast to most approaches, which focus upon individual sites, Uganda developed the capacity of national government and local administrations to administer wise use of wetlands throughout the country (Davis, 1993). The approach followed by Uganda includes:

1. Inventory of wetlands;
2. Identification of the values and services provided by wetlands;
3. Identification and quantification of threats to wetlands;
4. Detailed review of previous wetland development activities;
5. Provision of technical capacity at the Department of Environment Protection;
6. Developing a national wetland policy; and
7. Governmental and public awareness.

2.3.5 South Africa

In South Africa there have been a number of earlier initiatives aimed at the development of a wetland conservation policy. The Department of Water Affairs published a book "Management of the Water Resources of the Republic of South Africa" in 1986. With changes in the government in 1994, a new water policy has been developed by the Department of Water Affairs and Forestry, and translated into law through the promulgation of the new Water Act, 1998 (Cowan, 1999).

In 1988 the Department of Environmental Affairs organized a seminar and workshop on the use of existing legislation in the protection of the natural environment. This workshop showed clearly that the existing legislation was totally inadequate for the conservation and protection of wetlands. It was established that wetlands had no legal status in South Africa (Cowan, 1999).

2.4 South African policy and legislation

A model policy on wetlands for South Africa was developed by Cowan (1999), after identifying the need for a national policy regarding wetlands. The goals of this model policy are as follows:

- Maintenance of wetlands and their function throughout South Africa.
- Protection of wetlands of national and international significance.
- Enhancement or restoration of wetlands in areas where the continuing loss or degradation of wetlands or their functions have reached critical levels.
- Recognition of wetland functions in resource planning, management and economic decision-making.

Guiding principles to be used in the implementation of the policy (Cowan, 1999):

1. Wetlands and their functions contribute significantly to the health and well-being of South Africans and are an essential element of South Africa's natural diversity. As such, the conservation of wetlands is a priority requirement of environmental management and sustainable economic development efforts.
2. Wetland conservation is dependent on the incorporation of environmental objectives into the economic decision-making process, as recommended by the World Commission on Environment and Development.
3. Wetlands and wetland function are often inextricably linked to surrounding ecosystems and, therefore, wetland conservation must be pursued in the context of an integrated systems approach to environmental conservation and sustainable development and integrated catchment management.
4. The continued development of scientific knowledge and expertise in South Africa is fundamental to the achievement of wetland conservation.
5. Wetland conservation can only be achieved through a coordinated, cooperative approach involving all levels of government and the public, especially landowners, NGOs, and the private sector.
6. The government can and must play a leading role in achieving wetland conservation while respecting the rights of individual landowners coupled to realistic legislation, binding all the groups.
7. Where local communities exercise a traditional use of wetlands, the government will only undertake activities affecting such wetlands in consultation and cooperation with the relevant communities and their leaders.
8. A basic change in the attitude and perceptions of South Africans regarding wetlands, through communication and education programmes, is a vital prerequisite of wetland conservation.
9. South Africa, as a founder member of the Convention on Wetlands of International Importance especially as Waterfowl Habitat, and its location on the southern tip of Africa, has

a special responsibility to provide leadership in international wetland conservation efforts, through the management of transboundary resources such as water and wildlife in southern Africa and through encouragement of global wetland conservation.

2.5 Policy failures

The over-utilization of the total wetlands stock has been the result of a combination of:

1. 'Natural' land use conflicts: Natural land use conflicts, largely because of multiple use pressures, have afflicted coastal and estuarine wetlands to a greater extent than other wetland types. Agricultural reclamation, urban and industrial development and recreational pressures have all contributed to the substantial loss of wetlands (OECD, 1992).
2. Information failures: This includes a general lack of appreciation of the full economic value of conserved wetlands.
3. Market failures: Market failure such as externalities. All types of wetlands have suffered to some extent from externalities that have resulted in pollution damage. These include runoff of agricultural chemicals and soil erosion, point-source pollution from effluent treatment plants etc.
4. Intervention failures: The intervention failure is a complicated category, and could be linked to both information and market failures. Ineffective wetland policies are examples of this. Developing countries too have suffered from inefficient wetland policies. The absence of nationally integrated resource management policies has also resulted in many intervention failures in both developed and developing countries (OECD, 1992).
5. Absence of property rights: The absence of property rights means that farmers, for example, have little incentive to protect wetland values against actions that would diminish their supply, or to take action that would increase their supply in response to expected future increase in demand. In the case of wetland services, such property rights are poorly developed, essentially because of a lack of control of access to the wetland services, or because the value of this service is less than the cost of controlling access to it (OECD, 1992).

3 WORKSHOP RESULTS

Workshop and personal consultations were identified as one of the methods of obtaining information from all stakeholders. Two workshops were attended: the first round discussions were held at the National Wetland Indaba (NWI) in Stutterheim in October 2006; a follow-up workshop was organized in Pretoria in November, where case studies were discussed by various stakeholders, and individual questionnaires were completed (Swanepoel, 2006).

The following issues were raised during the first round discussions, the individual questionnaires and the stakeholder workshop:

3.1 Co-operative Governance

- The concept of an 'interdepartmental body', or 'ombudsman', or a legal advisor was strongly suggested during all discussions. In this organization, all departmental mandates should be recognized and supported by all departments. There wasn't a clear indication of representation on this interdepartmental body. Some delegates felt that the department with the strongest mandate should take the lead in this organization, and DWAF was generally accepted as the lead agent. One delegate with experience of a previous inter-departmental committee said that it worked well while the committee was chaired by a neutral (non-departmental) member, but once the chair was allocated to a department, then the other departments appeared to lose interest. Some delegates felt that an outside facilitator is needed to co-ordinate the organization, and some felt it should a legal advisor. Most delegates felt strongly about non-aligned leadership for successful co-operative governance, especially where government departments appear to compete with each other, or appear to be reluctant to accept the leadership over a sister department. One delegate, however, was concerned that an interdepartmental body would be too time consuming and a fast track process is required.
- DoA, DWAF, DEAT, DME, provincial and local departments need to serve on this 'interdepartmental body'. DEAT, provincial and local departments and especially DME are currently not well represented.
- A MoA between the different departments is needed to define the roles and responsibilities of each department.
- Government departments need to be more accessible to the public. The idea of a 'One Stop Shop' or an Environmental Call Centre was suggested several times during the first round discussions at the NWI, the Stakeholder Workshop, as well as in the questionnaires.

It is important to have a single place where illegal wetland activities could be reported; information on wetlands or wise use could be obtained; queries about wetlands could be directed; and applications could be handed in (this will prevent an applicant from getting permission from one department and then trying to leverage permission where it should not be given, or playing departments off against each other).

- The need for one wetland policy that could be used by all departments was clearly indicated, especially during the NWI discussions. When each department has its own policy with different rules and regulations from the other departments, it creates confusion, poor implementation and will lead to more wetland losses.
- Active forum for discussion: This was suggested by a delegate who has seen such an interdepartmental forum operating successfully at middle management and geographically local level to discuss issues as they arise, and also to keep the 'guidelines' as a living document.
- Currently there are some interdepartmental bodies that address specific issues such as CCAW, LAAC, REMDEC and EMPR (document) but they are not active enough, and could perform a more important role. They should also include DPLG and other local authorities.
- In many cases, activities approved by one department have impacts that involve other departments. Resulting pollution or degradation becomes the problem of a department which hasn't been involved with the approval of the activity in the first place. This could be solved by co-operative governance (see first point).
- Conflicting responsibilities of DoA: During the stakeholder workshop, issues about DoA's responsibilities were discussed in several case studies. It became evident that the responsibilities of the DoA are not always clearly defined, and not always well understood by members of the public or DoA officials themselves. With certain case studies (such as Case Study 1) it was thought that DoA did not have the strongest mandate to address certain issues, and that they were bullied into accepting responsibility for issues that is actually the responsibility of other departments. Other delegates felt that the DoA was supposed to be responsible, since it directly involved agricultural resources on agricultural land.

3.2 Gaps in legislation regarding wetlands

- Generally unclear wetland legislation.
- There is a serious gap in CARA regarding communal owned land, where some land-use regulations are not easily enforceable.

- Subsistence farming is also not addressed properly. In terms of CARA subsistence cultivation requires a permit, which makes most of this cultivation illegal, since these farmers don't have authorisation. There is thus an inconsistency in the CARA, addressing only commercial activities in wetlands, and not those of subsistence farming. SUPAR (that will replace CARA) needs to reflect the reality of South Africa regarding subsistence farming. During the Stakeholder Workshop this issue was raised and suggestions on addressing this gap included the use of guidelines on wise use of wetlands (still being developed); farmer support through extension officers; clear policy on wetland use and use of EPWP programmes to promote best practice.
- Unclear issues in CARA, for example the definition for cultivation, could also include mining, when only referring to 'mechanically disturbance of soil surface'.
- Peat mining is an issue that needs to be addressed.
- EIA regulations address introduction of alien species. What if alien species already exist in the system?
- Cumulative effect of activities, such as trout dams, small woodlots, subsistence farming etc. should be addressed in the legislation as well as EIA process.
- Non-point source pollution not addressed in legislation.
- Mandatory wetland audits/delineation prior to any development of change of land use.
- Protection of total water system: surface, subsurface and interlinkage of water systems affecting recharge.

3.3 Implementation

- Communication:
    - Legal requirements needs to be communicated to land users, regional and local departments;
    - Poor communication between national and local authorities leads to poor implementation or understanding of situations and legislation.
- Harmonizing agricultural legislation with other departmental legislation with regard to development issues. Harmonizing of legislation was seen as a crucial need by most delegates.
- Develop a 'road map' of procedure for harmonizing all relevant legislation and implementation – to prevent certain problems or to address current situation.
- Capacity building: this is a major point that came out strongly in the questionnaires.
- Awareness:

  - Public awareness about wetlands in general;
  - Land owner awareness regarding legislation;
  - Extension officers: Mixed feelings existed about extension officers. Delegates had the impression that not all departmental representatives had full knowledge of their acts – this is certainly not true for all departmental staff. Some delegates felt that poorly trained extension officers give wrong advice to farmers, leading to incorrect farming practices, while others reckoned that incorrect farming practices are a result of farmers who did not have the advice of extension officers. Everyone felt strongly that agricultural extension officers need to be properly trained in order to support landowners. This becomes a capacity problem in terms of actual extension officers as well as well trained officers.

- Promote and implement applications.
- Monitoring and follow up after licences have been issued.
- Enforcement of the law and prosecution of offenders. No law is implementable or effective if offenders can't be prosecuted.
- Conservation incentives: Delegates attending the Stakeholder Workshop felt that conservation could only be successful if people are rewarded for conserving resources. In countries such as the United States of America, landowners get incentives for not cultivating sensitive areas. In South Africa no such system exists, and people often have no choice but to utilize all available resources, such as wetlands, since it would be their only source of income. It was felt that incentives in the form of tax rebate or government subsidies could improve conservation of wetlands.
- CASP and LRAD are agricultural support systems that should be used to their full potential.

3.4 Tools

The idea of developing certain 'tools' that all departments as well as the community (such as farmers, developers etc.) could use was strongly emphasized during all the discussions. These tools would be scientifically based, containing baseline information on which informed decisions could be taken. It would help to unify and standardize variables, such as buffer zones, wetland definitions and delineation across all departments. Some tools that were identified to be developed include:

- Standard wetland approach including (this issue arose several times during all the discussions):
  - One standard wetland definition;
  - Standard guidelines on wetland delineation;

  - Rehabilitation and;
  - Buffer zones.
- Wise use of wetlands.
- Grazing requirements and impacts.
- Afforestation requirements and impacts (also cumulative where the effect of many small woodlots becomes significant).
- Guidelines for roads and railways.
- Dam building guidelines and restrictions.
- Mining legislation.
- Subsistence utilization of wetlands.
- Sanitation for rural settlements.
- Policy and procedure for withdrawal of activities in unsustainable managed wetlands.

3.5 Other obstacles

- Inability of government officials to implement the current acts (such as NWA, CARA and NEMA) (Case Study 1).
- Manpower and capacity problems.
- Wetlands are not understood well enough and more research is needed. Wetlands are generalized, while each wetland is unique and should be evaluated separately.
- Political will.
- Ignorance.
- Poverty.

4 PLANNING PROCESS FOR DEVELOPMENT OF POLICY FOR WETLAND MANAGEMENT

During a planning meeting on 30 August 2006 (complete minutes in workshop report (Swanepoel, 2006)), the following process was agreed. This discussion document is only the first phase of the management process, and will hopefully contribute to meaningful discussions and understanding about wetlands in agriculture, and to the development of adequate and effective wetland management and protection under SUPAR.