CRITERIA FOR SUCCESSFUL LOCAL LEVEL MANAGEMENT OF WATER RESOURCES

Examples from two WUAs in the Eastern Cape

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ABSTRACT

As a result of South Africa's democracy and introduction of new policies and laws in 1994, a new approach to water resource management has been developed. This new approach includes the requirement to establish local level water management institutions which will eventually become self sustainable. These institutions are called water user associations (WUAs). The research uses two case study WUAs in former homeland areas of the Eastern Cape. They are assessed and evaluated against a set of criteria, taken from Shackleton (1998), that are conducive to successful local level management. The criteria include characteristics on the nature of the water resource, the nature of the water resource users, institutional issues, the nature of rules and regulations, economic issues and policy issues. The research found that the two case study WUAs lacked most of the characteristics that are conducive to successful local level management. The WUA establishment process was dominated by the state. Stakeholder involvement was weak and failed to sufficiently recognize the traditional authorities. The facilitation of the establishment process was not effective due to a lack of state resources. A more intense and inclusive process driven approach towards establishing WUAs is required. This could tend the characteristics of a WUA toward becoming more conducive to successful local level management.

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1. INTRODUCTION

1.1 Background to study

Understanding collective action within community based natural resource management (CBNRM) is of global importance as pressures on communal land and our pool of natural resources such as water are ever mounting (Shackleton, 1998). These pressures result in a weakening of local institutions and the management systems for common pool resources. This leads to a deterioration of resources and hardships for resource reliable communities, especially the poorest (Shackleton, 1998). South Africa is no exception as management systems over its land held under communal tenure, some 15 million hectares, are facing increasing pressures as a result of resource exploitation from outside traders, weakening traditional systems, a changing socio-political environment, population increases, migration and the already degraded land in large areas. Communal land predominantly occurs in the former homeland areas[1] in the Eastern Cape but land under group ownership in South Africa as a whole is increasing as the land redistribution and restitution process continues to aid community groups in attaining land tenure. In many cases, the state is devolving power to manage land and resources, including water, back to local communities therefore further increasing the pool of resources held under community ownership and management (Shackleton *et al* 2002). However water resources are directly linked to land tenure therefore land redistribution policies also have significant implications regarding access to water and the management thereof.

Initially efforts to implement the land reform policy in South Africa focused on the process of attaining land and the legal processes required in securing ownership (Shackleton, 1998). Issues arose as not much consideration was given to the policy and implementation regarding the implications of acquiring land under group ownership and how the natural resources, such as water, would be used and managed (Shackleton, 1998). In the last decade, there has been much advancement, both in theory and in practice, towards strengthening local institutions in the management of resources.

As a result of the new policies and laws since South Africa's independence in 1994, new water resource management systems were introduced. The National Water Act (NWA) required a National Water Resource Strategy to be developed. This strategy introduced a three tiered management system reaching from national government, to regional level management, and down to local level management. A key component of this strategy aims to establish local level water management institutions that are self sustainable. However, South Africa is extremely diverse and requires different approaches to managing resources to suit site specific locations, especially in former homeland areas where systems of traditional governance over natural resources still exist. In these areas the state strategy needs to integrate traditional governance systems (DWAF 2004a).

[1] Homeland areas were "independent" black states created by the apartheid government for the resettlement of black people relocated from white areas. In 1994 when the apartheid system was abolished, these areas were re-incorporated into South Africa. Large portions of land in these areas are still considered to be tribal land.

The area under communal ownership and community management is ever increasing in South Africa, but many challenges lay ahead (Shackleton *et al* 2002). This paper therefore focuses on requirements for successful collective local level management of water as a natural resource. Two case studies are examined where water user association (WUA) institutions have been established to manage water resources. These case studies are located in a rural area of the Eastern Cape and have been set up in response to the National Water Resource Strategy (NWRS) that requires devolving a certain level of power to the local level for the management of water resources.

1.2 Aims

The overall objective of this research is to find ways to improve local level water resource management within the South African context by identifying conditions, in the literature, conducive to natural resource management and comparing them to conditions in two existing local level water institutions in the Eastern Cape. Specific aims of the research are thus:

1. To provide an overview of South Africa's new approach to water resource management,
2. To identify the conditions conducive to successful local level collective action for the management of natural resources,
3. In relation to Shackleton's criteria, (1998), assess whether these criteria are in place with respect to two WUAs in the Eastern Cape, and
4. To identify opportunities and challenges associated with establishing WUAs in the Eastern Cape.

1.3 Methodology

This research requires an understanding of the current policy and legal framework governing water resource management in South Africa as well as an understanding of the theoretical underpinnings of CBNRM. Consequently a literature review on these topics was carried out to provide a base from which the research could proceed. Primary data was gathered through field investigations including interviews and workshops with stakeholders involved in two WUAs in the Eastern Cape. The purpose of the fieldwork was to enhance understanding of the process involved in establishing WUAs and also understanding WUAs functions. The study focused on two WUAs in the rural areas of the Eastern Cape namely Misikhanye and eDikeni (see figures 2 and 3). The fieldwork consisted of four trips comprising about 20 days in total in the study area. Information was gathered using a number of methods. A stakeholder analysis was carried out to identify institutions or stakeholders that were involved or interested in the establishment and operation of WUAs. Following this analysis, a number of semi-structured interviews with relevant stakeholders were then conducted covering state institutions, private organisations, NGOs, traditional leaders and local villagers. Transect walks were also undertaken with community representatives to get a better idea of day to day activities and to better understand the role that water plays in the lives of these communities. Finally two participatory workshops were held in each WUA area to obtain local perspectives on the processes involved in establishing WUAs, as well as the functions and purposes of WUAs and communication flows.

1.4 Limitations to study

Time in the field was limited due to budget and time constraints restricting the depth of information that could be gathered. However, in this time, the researcher obtained useful information and insights on institutional arrangements regarding water management, issues and challenges facing the implementation of WUAs, cultural and traditional practices that may influence new water management institutions, and local conditions. The field research including meetings, interviews, workshops and field observations were carried out in the Eastern Cape during the first six months of 2007. Working in the rural areas of the Eastern Cape posed various logistical difficulties including the arrangements of meetings and workshops. Information on group meetings in these rural areas was not always conveyed to all the required stakeholders and thus certain meetings were poorly attended.

1.5 Structure of the paper

This first section of the paper has provided the background and aims of the project. Following this, the policy and legislative framework relevant to water resource management in SA is presented and an overview of South Africa's new approach to water resource management is provided. Chapter three provides a conceptual framework for the paper based on common pool theory after which a table of favourable criteria for successful collective action at a community level is provided. The paper then moves on to describe the characteristics of the two case study locations. The next chapter uses the findings gathered from the two case studies to assess how the WUAs perform against the identified criteria. Before concluding the strengths and weaknesses of the WUAs as local level water management institutions and what their opportunities and challenges are likely to be, are discussed.

2. SOUTH AFRICA'S NEW APPROACH TO WRM

The following chapter aims to contextualise WUAs within South Africa's new water policy. A brief overview of South Africa's new approach to water resource management, related policies, new concepts and water management institutions will be provided. WUAs also form part of a growing global trend towards CBNRM initiatives therefore policies and laws relating to CBNRM will also be covered.

2.1 The new approach to water resource management

The old system of water management in South Africa was characterised by centralised control, inefficiency and inequity (DWAF, 2004a). These issues were tackled and changed as the democratic South Africa adopted a new approach to water resource management. This new approach encapsulates international thinking on integrated water resource management (IWRM). The principles upon which this new approach is based are:

- A movement towards demand management,
- Decentralisation of water management with more stakeholder participation,
- An integrated approach to water, ecologically, economically and socially,
- Recognition and protection of water resources,
- Recognition of rights to water, and

- Increased social equity in access to water and voice in water related institutions.

(Ferguson and Mulwafu, 2004)

IWRM is defined as "The coordination of development and management of water and land and related resources to maximize resultant economic and social welfare in an equitable manner without compromising sustainability of vital ecosystems" (IRC, 2006). Post-apartheid South Africa embraces this concept as it looks to correct imbalances of the past and provide opportunity for people to improve their livelihoods. South Africa has adopted a catchment management approach to integrated water resource management as outlined in the National Water Act (NWA). IWRM is highlighted in the preamble to the NWA, as 'The need for the integrated management of all aspects of water resources and, where appropriate, the delegation of management functions to regional or catchment level so as to enable everyone to participate'. IWRM has "three pillars" of implementation: moving towards an enabling environment of appropriate policies, strategies and legislation for sustainable water resources development and management; putting in place the institutional framework through which the policies, strategies and legislation can be implemented; and setting up the management instruments required by these institutions to do their job (Jønch-Clausen, 2004).

2.2 Policy and legislation relevant to IWRM in South Africa

The constitution lays down the foundation upon which other laws including water law and policy are formed. The Constitution emphasises the imperative to "...heal the divisions of the past..." and to "...improve the quality of life of all citizens" (RSA, 1996). The National Environmental Management Act no. 107 of 1998 (NEMA) provides a set of framework principles that inform decision making on issues related to the environment and to ensure that all activities that have a detrimental effect on the environment are minimised while maximising opportunities for sustainable development. NEMA calls for co-operative governance in South Africa and encourages communication and co-ordination across all tiers of government. The National Water Act (NWA) provides a framework for water law reform processes and places the Department of Water Affairs and Foresty (DWAF) as the public trustee over all of South Africa's water resources. The NWA clearly defines that the country should be divided into demarcated water management areas. Catchment management agencies (CMA) must be established to govern these management areas and local level water management institutions must also be put in place. These local level institutions include the Water User Associations (WUA) which enable communities to pool resources together to carry out activities of common interest more effectively for their mutual benefit (DWAF, 2004a). The structure of water management institutions is explained in more detail in the next section, 2.3.

The NWA (1998) also stipulates that a reserve must be determined before any water can be allocated for use outside basic need. The reserve is calculated by measuring the mean annual runoff (MAR) and subtracting the sum of a specified ecological reserve and a basic human needs requirement. The ecological reserve refers to the water required to protect the aquatic ecosystem of the water reserve. The basic need component is made up of the essentials for basic survival which are for drinking, food preparation, and personal hygiene (RSA, 1998).

The national water resource strategy (NWRS) is the main mechanism through which requirements in the NWA are carried out. The NWRS sets out a plan to manage water resources in a manner which promotes equity, sustainability, and efficiency, and in particular to improve the state of inequity, poverty, and deprivation in South Africa (DWAF, 2004a). Important themes within this strategy include water conservation and water demand management, the protection of water resources, water use and licensing, and a pricing strategy. Part 5 of the NWRS outlines the strategy for establishing water management institutions such as the CMA and WUA which is explained in further detail in the following section.

2.3 Water management institutions

Water resources and water supply in South Africa fall under the jurisdiction of DWAF. Two different water policy objectives exist under DWAF. First and foremost is to supply water as a basic need for survival, which is under the jurisdiction of district municipalities who are the Water Service Authorities. Either local municipalities or water boards are appointed to be the Water Service Providers (WSPs). However, some smaller local municipalities have not been able to deliver as WSPs and district municipality then assumes control over these (DWAF, 2004b). The second objective is to provide water beyond basic needs and aims to provide water for enterprise development, especially in poor rural areas that have been previously disadvantaged. The NWRS is created in part to fulfil this second objective through three tiers of water management institutions.

In terms of the NWRS, the country has been divided into 19 Water Management Areas (WMAs) which are to be regulated by Catchment Management Agencies (CMAs), a new regional institution specified in the NWA. Since these WMAs are based on hydrological boundaries, they can cut across the administrative boundaries of provinces and districts. Three tiers (see figure 1) can be found within this water resource management framework. The first tier consists of the Minister and DWAF, the second tier consists of catchment management agencies (CMA), and the third tier consists of water user associations (WUA). WUAs are found at a strictly local level and can provide a mechanism through which to implement the catchment management strategy at a local level. A WUA is an association of users that may be a single-sector or multi-sector association. A single-sector association comprises a group of similar users, for example emerging farmers, and acts in the interests of those farmers. The process of developing and implementing these management institutions began in 2004 and is still underway. It is likely to take several years before these institutions are fully established and functional.

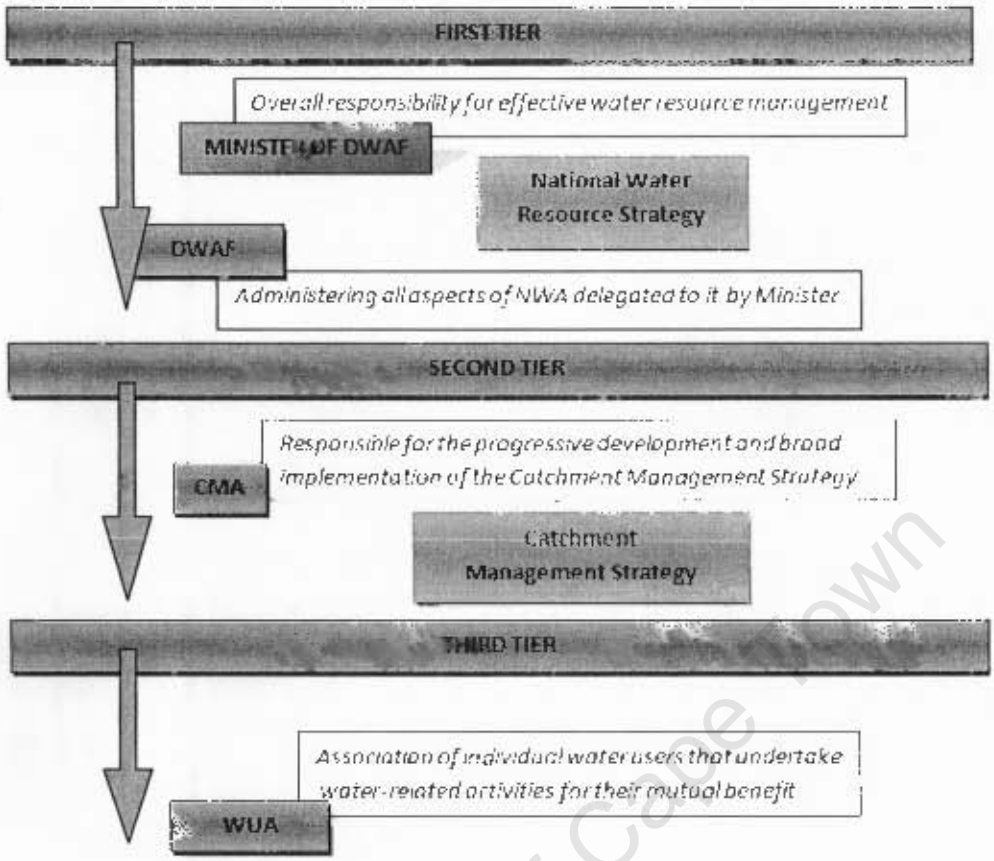

Figure 1: The three tiers of WRM in South Africa. Source: Adapted from DWAF (undated)

2.4 Policies and Laws related to CBNRM

Throughout a wide range of existing South African policies and laws, the promotion of community involvement in natural resource management is legitimised and the government therefore has the obligation to encourage the implementation of CBNRM. These include policies and laws related to a number of sectors including biodiversity and conservation, agriculture and land reform, marine and freshwater systems, forestry and woodlands, and tourism (DEAT, 2003). Generally the government departments involved in implementing CBNRM policies are those that have direct legislative control over natural resources such as the Department of Water Affairs and Forestry (DWAF) and the Department of Environmental Affairs and Tourism.

These government policies embrace four common objectives and principles of CBNRM that need to be addressed. These are:

- The need to improve the livelihoods of impoverished people making a living from common pool resources.
- A requirement for community participation.
- The need to address historical and contemporary imbalances in access to resources and capital, and
- The problem of unsustainable resource use.

(DEAT, 2003)

However, the process of ensuring that these objectives reach ground level is undermined by a number of practical issues. Most government departments, especially in the Eastern Cape, do not have the capacity to implement CBNRM policy objectives. Moreover, implementation efforts often lack synergy between different

departments instead of co-ordinating the few resources available to work together. Efforts therefore often overlap wasting precious capacity to successfully carry out CBNRM initiatives (DEAT, 2003).

Issues aside, water management policies in South Africa reflect clear CBNRM objectives. The NWRS looks at the management of water beyond meeting the basic human need and focuses on providing water for enterprise development. It does so by initiating localised WUA institutions that are designed to empower communities to manage their own water resources. In the Eastern Cape, this mainly involves previously disadvantaged poor farming communities. The aim is to pool local resources together through encouraging community participation and promoting sustainable use of their water resources.

3. CONCEPTUAL FRAMEWORK

3.1 Common pool theory

The following section provides a theoretical basis for common pool resource management. The development of common property theory helps us understand the reasons behind different approaches to natural resource management and why these are changing. Common pool theory concepts and definitions are also explored and clarified.

3.1.1 Evolution of common pool theory

The core of common pool theory is associated with debunking Hardins 1968 'tragedy of the commons dilemma' (Shackleton, 1998). Hardins theory argues that all resources held in common will inevitably suffer from over exploitation and degradation (Hardin, 1968). His theory on natural resource management was based on his arguement that a "man is locked into a system that compels him to increase his herd without limit - in a world that is limited" and that "having a conscience is self-eliminating" (Ostrom, 2002 p11). In other words resources held in common will gradually degrade as everyone seeks to maximise individual benefit by 'eating as much pie as possible' in fear that they will lose out if they don't. Over time those who practice restrained use will lose out economically compared to those practicing unrestrained use. His solution to this suggested that effective rules to prevent this 'dilemma' can only be reached through the state and not by local institutions (Ostrom, 2002).

Since the late 70's, Hardin's model has been challenged by a variety of academics (Ostrom, 1986 Berkes, 1989 Feeny et al, 1990). His concept of common property management was seen to be confused with open access conditions (Ostrom, 2002). Social scientists argued that where long term interests existed for a group of users, rules over access and use evolve to avoid overuse and degradation (Ostrom, 2002). However it was recognised that these locally created rules for common property management were not always successful and so under certain conditions involvement of government authorities would be required to intervene to avoid further degradation. It was still of utmost importance that intervening external governance authorities would need to include local communities in the formation of a new regime where location specific characteristics and successful elements of the old regime would still be recognised (Ostrom, 2002)

The theory of free riding, within Hardin's dilemma, was also challenged by social scientists. Research suggested that where a group of resource users repeatedly use a common resource, such as rural farmers in a village, restricted use is most often preferred so long as other users agree to do the same (Ostrom, 2002). Therefore common property management was seen to have a coordination challenge based on mutual agreement rather than being an outright 'tragedy' (Ostrom, 2002).

Case study analysis in developing countries regarding natural resource management began to reveal a common theme. Policy reforms transferring natural resource governance from local institutions to state authorities, the solution suggested by Hardin, only allowed conditions of the resource and resource users to degrade (Ostrom, 2002). The question is...Why was this happening? According to Ostrom (1990) and Berkes (1994) governments didn't have the ground capacity to manage and monitor resources. Instead of the pre-existing local management regimes with some rules on access and use, state management regimes became ineffective due to a lack of enforcement by the state. In developing countries, such as in Africa, Hardin's solution of state authority was only causing conditions in which his 'dilemma' would prevail. Moreover, the lack of enforcement allowed corrupt public officials to gain backhand profits from anyone looking to exploit resources (Ostrom, 2002).

3.1.2 Clarification of key concepts

In past research there has been much confusion over the terms used in common pool theory. The following section aims to clarify some of these terms and concepts. When we speak of the commons we refer to any one of an array of resources, facilities and institutions that involve some sort of group access or ownership. For academic purposes it is beneficial to distinguish resources from the human arrangements that manage these resources (Ostrom, 2002). The term 'common property' has been referred to, in many texts, as the resource as well as the management arrangement. Therefore to avoid confusion this paper will refer to the actual resource as a 'common pool' resource, and 'common property' will refer to the management arrangement over the resource as is done in Ostrom (2002).

A common pool resource has two defining characteristics. Firstly, to exclude someone from its use is difficult or costly and secondly, using the resource subtracts from what is available for others to use (Ostrom, 2002). This subractability is generally what makes resources so difficult to manage (Shackleton, 1998).

As mentioned earlier common property is one of four broad management regimes. Private property, state property and open access are the other management regimes although open access is seen by some as a lack of any management regime (Shackleton, 1998). It is important to note that there is no clear cut lines between regimes and the management of common pool resources may include aspects of different regimes.

A common property regime implies:

- Ownership and access rights belong to a specified group or community where non-members are excluded. Rights and duties of members and non-members are defined by set rules regarding access, use and management of the common pool resource. To ensure compliance penalties are put in place (Shackleton, 1998).

A state property regime implies:

- The rights of ownership and management of natural resources are held by the government. However, the state may under certain

circumstances pass on some of these rights to certain users for particular resources. Precise rules and regulations apply and enforcement is generally carried out by the state (Shackleton, 1998).

A private property regime implies:

- Rights belong to an individual or corporate entity and are protected by law. This private property right can be traded through the market (Shackleton, 1998).

An open access regime implies:

- An absence of a management regime where no-one has ownership rights and anyone is allowed to access the resource. This however often results in over-exploitation causing degradation of the resource (Shackleton, 1998). A state of open access could also occur from a state property regime that lacks enforcement (Ostrom, 2002).

3.1.3 Advocating for common property regimes

Common property institutions are gaining a large amount of support largely because they promote principles of CBNRM. A number of arguments that promote these management regimes have been put foreword in the literature by researchers such as Berkes and Ostrom (1990) and (2002), Feeny et al (1990), Baland and Platteau (1996), and Bromley and Cernae (1989).

In developing countries most households rely on communal land for food, access to water, fuel and shelter on which their existence depends. Privatisation and nationalisation take power away from local communities and must therefore deliver more effective resource management if they are to improve livelihoods (Shackleton, 1998). However, these policies have mostly failed to improve the state of common pool resources and have decreased the standard of living for the poor and put resources in the hands of the rich (Ostrom, 2002). Maintaining common property regimes keeps resources in the hands of the people who are most dependent on them and therefore provides a safety net for the poor (Shackleton, 1998).

Common property regimes allow for more equitable natural resource distribution. In developing countries the elite hold most of the natural resources. Private ownership of land, in comparison to community ownership, often reaps short term benefits off the land and is less dependable on future survival of the natural resource. Therefore private ownership might promote less sustainable use. Communities that rely on the land for survival have few alternatives and higher long term stakes, and are therefore more likely to promote sustainable use.

It has been repeatedly shown that community based management institutions have been far more successful than state property regimes in preventing natural resource degradation (Shackleton, 1998). Bromley and Cernea (1989) argue that one of the most important lessons of the last half century lies in the systematic failures of state-centralised management of resources.

Economically, Runge (1986) emphasises that common property management within the context of rural village life is more viable in developing countries. Transaction costs are much lower for common property than for private property. Transaction costs for private property are too high for the poor to afford. Secondly, where resources are widely spread there is less risk for the individual if they are held in common than if held in private. This promotes incentive to abide by rules and encourages social stability (Shackleton, 1998).

3.2 Conditions conducive to successful collective action

In the last two decades research has explored which characteristics of natural resources are favourable for establishing and sustaining institutions that prevent degradation of common pool resources (Dolsak and Ostrom, 2003). McCay and Acheson (1987) and Ostrom (1990) identified certain resource characteristics that promote successful common pool management. As research in the field increased other characteristics were also identified as key factors in determining the success of common pool resource management. These include characteristics of the resource appropriators and concepts such as Bordiieu's (1992) 'social capital' were introduced to the literature (Dolsak and Ostrom, 2003). Similar research was developed for favourable characteristics that the economic environment, legal environment and institutional design provided to enhance common pool resource management.

The table below presents a set of characteristics conducive to successful common pool resource management. It was developed by Shackleton (1998) by examining a number of different sources including old surviving successful management systems as well as new successful approaches that have re-established common property regimes, theoretical models, and experiences and lessons learned from a range of case studies (Shackelton, 1998). A number of researches ideas and studies were drawn on to create this table of criteria (Ostrom 1992, Critchley and Turner 1996, Baland and Platteau 1996, Wade 1987, Lawry 1990, Cousins 1996).

Conditions conducive to successful collective action: A theoretical framework	
SPECIFIC	DEFINITION & THEORY
Nature of the resource	
Boundaries	Resource boundaries must be defined and distinct.
Resource size	A resource with small boundaries is easier to manage and monitor.
Ecological properties	Rapidly renewable resources are easier to manage than slow-growing resources.
Supply-demand conditions and degree of dependency	High levels of dependency and resource scarcity result in greater consciousness of the need to manage the CPR.
Indicators of CPR conditions	Reliable indicators of the condition of the CPR raises awareness amongst resource users of the impacts of extraction, which then provides an incentive to manage
Nature of the resource users	
User group size	Small user groups have lower costs, rules are easier to enforce and social sanctions are more effective. There is also greater sense of mutual interdependence and community identity. Small groups can be nested within larger groups - see institutional issues.
Residence	More favourable if users reside in close proximity or "in" the resource.
Membership and eligibility	Clearly defined membership and conditions for eligibility should exist.

Degree of homogeneity	Greater homogeneity favours cooperation as resource users are not strongly divided by different conf. ctual use patterns, different perceptions of the risks of extraction, cultural antagonisms, and dependency on the resource.
Prior experience in collective action	Repeated experience of collective action lead to positive attitudes to cooperation often conveyed through myths, customs and sayings.
Local understanding and knowledge of the resource	The perception that the benefits of collective action exceed the cost is more likely to arise when members have accurate information on the resource, the impact of withdrawal and the supply-demand situation.
Degree of mutual trust and reciprocity	Users need assurance that if they change to more costly, joint strategies, others will also. Compliance through trust is an important condition.
Institutional issues	
Ownership status	Resource users must be able to sustain legal claims as "owners" of the resource, otherwise outsiders cannot be effectively excluded.
Presence of local organisations	Emergence of effective CPRM institutions is most likely where resource users have had some prior experience in organisation.
Centralisation vs. decentralisation at a local level	Some form of representative centralised control at resource user level helps ensure effective sanctions and monitoring, especially if the user group is large.
Authority systems	Direct responsibility for CPRM lies with the resource users, but effective system of authority to legitimise and enforce user rights and operating arrangements are needed. Local institutions can rarely stand alone.
Adaptable/learning institutions	An institution that is able to change its rules, incentives and sanctions has a higher probability of surviving. All users should participate in modifying rules.
Nested institutions	Nesting user groups in federated structures overcomes problems of large user groups and contributes towards addressing questions from outside the user group boundary.
Leadership	A good leader or co-leaders to direct and champion the cause can contribute considerably to success. More and more these are young, educated members of the community who have successfully found ways to cooperate with the traditional leaders.
Conflict resolution	Simple and low-cost mechanisms for conflict resolution and ensuring fairness are essential (e.g. public hearings, rotation, lotteries, random allocation).
Relative power of sub-groups	Chances of success are improved when those groups benefiting from the commons are more powerful than those who favour private property. This may mean co-opting the elite.
Nature of rules, regulations and sanct	
Source of rules	Rules and regulations should be locally derived, built on customary systems and beliefs, and agreed upon by resource users. Some inputs of scientific and technical knowledge may be important.
Flexibility of rules	Regulations should be flexible to accommodate times of stress, annual variation, and exceptional circumstances users may find themselves in.
Simplicity of rules	Rules should be simple so that resource users can remember them and transmit them to others. The fewer and less ambiguous the rules, the higher the agreement between what is and what is not an infraction.
Achievability of rules	There must be congruence between withdrawal and management rules and local conditions. Rules should not be seen as obstructionist or creating undue hardship.
Sanctions and punishment mechanisms	There must be clearly understood systems and mechanisms of sanctions and punishment for rule infringement. These can be both informal (moral and ethical codes) and formal (charges, hearings and fines).

Graduated sanctions	There should be a graduated system of sanctions depending on the seriousness of the offence, e.g. in the Japanese system this punishment ranges from confiscation and apologies, to fines, ostracism, rights removal and finally banishment.
Rules enforced and monitored	Monitoring activities and rule enforcement are essential. If monitoring is lax, sanctions may not be applied, and the CPR system will not be effective. A combination of formal and informal monitoring is most effective. Formal monitors should be accountable to resource users.
Economic issues	
Incentives versus subsidies and dependence	Perceived benefits of organising and complying with rules must exceed the perceived cost. A viable common property regime has a built-in structure of economic and non-economic incentives that encourages compliance. One important reason for the collective action failure is the high discount rates of future income by people subject to the pressure of survival constraints. Opportunity costs often have to be catered for.
Benefits accrued	Benefits should be equitably distributed to all rights holders.
Value of the CPR	The greater the economic value of a CPR, the greater the incentive for collective management to conserve it.
Policy issues	
Characteristics of the legal and political environment in which the users reside	For common property to be effective the state must be willing to recognise and protect the rights of people living under a CPR regime, and should respect local community organisation and control, and permit and facilitate its development.
Relationships between the users and the state	The role of the state should be supportive and enabling and it should provide the legal framework within which local level institutions can operate. Co-management can be effective, provided control is still decentralised to the local level.
Relationship between donor agencies and users	Donor agencies should play a supportive role providing funding, impartial facilitation, training and capacity building.

Table 1: Table of criteria for successful local level institutions **Source: Shackleton (1998)**

It is important to note that these conditions are not the only ones to promote successful local institutions but have generally found to be necessary for success. Not all conditions need to be in place and some may not be relevant in certain contexts. It is therefore important to understand the context in which common pool resource management institutions exist before determining relevant characteristics.

4. STUDY AREA OVERVIEW

This paper compares two WUA institutions against criteria that are required for successful local level natural resource management. The following chapter provides an overview of the study area characteristics in which the two case study sites are located in order to give context to the research findings in chapter 5.

4.1 Location

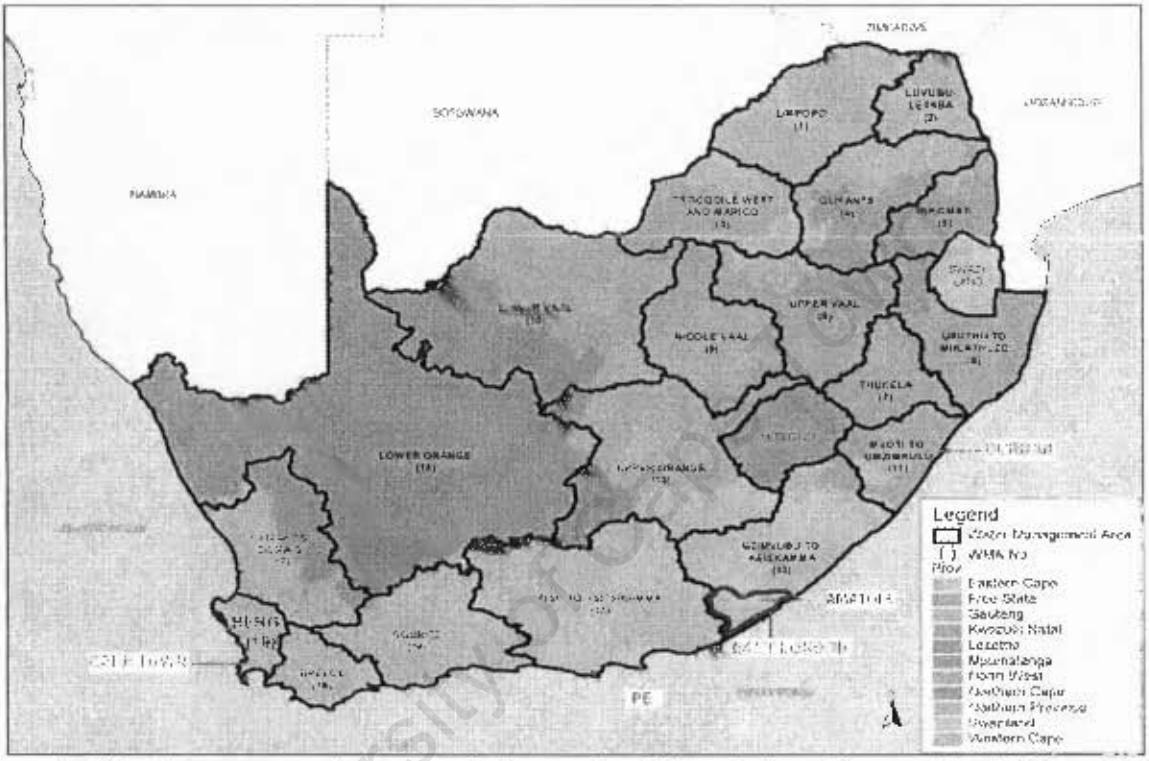

Figure 2: Map, the 19 water management areas overlaying provincial boundaries Source: Adapted from DWAF (2004c)

The WMA boundaries set by the NWRS are based on geographical boundaries and therefore differ to political boundaries. Figure 2 above shows this difference clearly with the 19 WMAs overlaying the provincial areas. The two WUAs are within the Amatole district municipality (see red outline in figure 2) which is situated in WMA 12 and on the central coastline of the Eastern Cape. Figure 3 shows the exact locations of the eDikeni and Masikhanye WUAs within the Amatole district municipality.

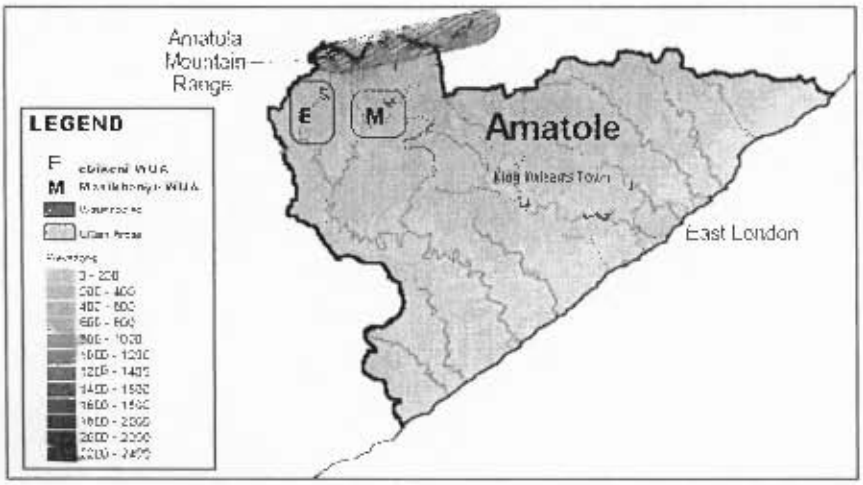

Figure 3: Map showing location of WUAs within Amatole District.
Source: Adapted from DWAF (2004b)

4.2 Demography

In terms of the 2002 census, the Amatole district in the Eastern Cape has a population of 953,000 and is expected to grow to 1.2 million by 2025. However this growth is to take place in urban areas that are expecting economic growth and employment opportunities such as the Buffalo City municipality. Currently only about 26% of the population live in urban areas and the other 74% live in rural villages. This is predicted to change as populations in rural areas will decline due to urban migration and as the effects of HIV/AIDS become evident. (DWAF, 2004b)

4.3 Land tenure

Land tenure in the Eastern Cape is a complex issue as many different systems are found. Within the former Ciskei and Transkei homelands five different systems exist. These include tribal, freehold, state, municipal and institutional (churches etc) land. Eighty percent of the former homeland area is held under modified tribal land tenure while the majority of land within the former South African areas is held under freehold title. (DWAF, 2004b) The concept of modified tribal land tenure refers to land that is state owned but traditional leaders still have an influence on access and ownership (FAO, 1997).

It is important to note that due to noticeable degradation on tribal lands, attempts have been made to change this tenure system. However, these attempts have not been very successful (DWAF, 2004).

4.4 Economic development

The Eastern Cape has a very high rural population with a relatively weak economy (DWAF, 2004b). State services and resources for further development are therefore limited. East London is the centre of economic activity with the harbour, airport, highway, and railway connections. The growth and development strategy for the area has identified four sectors on which to focus its resources. These include: manufacturing industries mainly within the Buffalo City municipality; tourism along its coast as well as in Hogsback; commercial forestry around the Amatole mountain range; and agricultural related activities outside the urban areas. These agricultural activities in many of the poverty stricken poor farming areas will however rely

heavily on the success of rehabilitating the old irrigation schemes and the success of local resource management institutions (DWAF, 2004b).

4.5 Physical characteristics

The Amatole district catchments have their water sources within the Amatole mountain range that peaks near Hogsback at an altitude of 1960 meters above sea level. From here these rivers flow in a south easterly direction towards the coastline and into the Indian Ocean. Soils in the Eastern Cape are dispersive in nature and once the vegetation is removed the topsoil erosion is extremely fast. These soils make their way into rivers increasing the suspended load causing a decrease in water quality and more rapid dam siltation. Natural resource and land management policies therefore need to be effective in tackling this issue. The climate and temperature varies in relation to altitude and proximity to the coast. Temperature variations are more stable along the coast whereas frost is often experienced inland during winter with snow often falling in the Amatole mountain range while summer can bring temperatures exceeding 40 degrees Celsius. The summer rainfall season produces a healthy 1200 mm per annum in the upper Amatole catchments. Savannah and grassland biomes dominate the rich diversity of vegetation in the Amatole area. This diversity is being threatened by alien invasives, overgrazing, burning, wood gathering, and poor farming methods therefore further enhancing the need for effective land management systems. Alien invasives such as wattles and eucalyptus species are widely spread across the region. In many dams water weed, such as hyacinth, problems are increasing as algal blooms are spurred on by rising pollution levels. Forest area vegetation is concentrated in the Amatole mountain range. Land use includes livestock farming, subsistence farming mainly in the former homeland areas, commercial vegetation and pineapple farming, several irrigation developments and commercial forestation (DWAF, 2004b).

4.6 The state of water resources in the study area

Even though rainfall in Amatole is not very high, the demand is still less than the current yield and therefore surplus water supply is available. Having this surplus supply is uncommon in South Africa and therefore water conservation is still essential to ensure efficient use and stable future supply. The demand in comparison to the yield in the area is low because many dams were built on the large rivers with future visions of downstream irrigation development. However most of these did not materialise and those irrigation schemes that did materialise became defunct. So these areas may be experiencing a surplus of water but the lack of treatment facilities and bulk supply infrastructure is likely to result in an overwhelming demand for treated water especially in growing urban areas. Even though progress has been made with building this required infrastructure, many projects have been delayed due to a lack of funds and resources (DWAF, 2004b).

In the rural areas of the Eastern Cape 63% of the population have access to treated water and only 30% have adequate sanitation facilities. This raises concern with regards to health risks from poor water quality as many people still use river water for basic needs. Water quality is hardest hit in highly populated urban areas but in the more rural areas water quality ranges from good to medium. The quality of the water is generally deteriorated by soil erosion, overloaded sewage works, unlicensed waste sites, poor sewage infrastructure, and runoff from settlements with insufficient sanitation. These factors also impact the ground water supply which is a water source for many villages (DWAF, 2004b).

4.7 The two case study sites

The following section gives a brief description of the areas under the jurisdiction of the two WUA institutions. The different stages of establishment for each WUA will also be made clear.

The following characteristics are shared by both areas. The WUAs are located in the north of the Amatole district municipality. The local municipalities have not performed to the required standard in the past with regards to collecting water tariffs and so Amatole district municipality has assumed control. The assigned WSP for these areas is the Amatola Water Board. The villages in both areas can be characterised by resource-poor communities who rely mainly on farming for survival and income. Infrastructure and basic services are generally poor.

4.7.1 Masikhanye WUA area

Masikhanye WUA is located in an area of the upper Keiskamma river catchment. It consists of six villages just below Sandile Dam as can be seen in Figure 4. Five of the villages are located inside the Amahlati local municipality and the other in Knonkobe local municipality. The governments aim was to reduce operation and maintenance costs of infrastructure including irrigation schemes around Sandile Dam and to devolve management of irrigation schemes to the local level. The WUA was initiated by DWAF to assist in fulfilling these aims (Ntsonto, 2005). Local farmers in Masikhanye also expressed a need for improved water access and management of the irrigation scheme. The WUA is not a transformed irrigation board as no committee previously existed. DWAF assisted with the election of an interim committee consisting of representatives from each village. Their constitution has been drafted and awaits approval from the Minister after which the WUA will become a legally recognised institution and a governing board will be selected. The interim committee currently meets about once a month while they await approval.

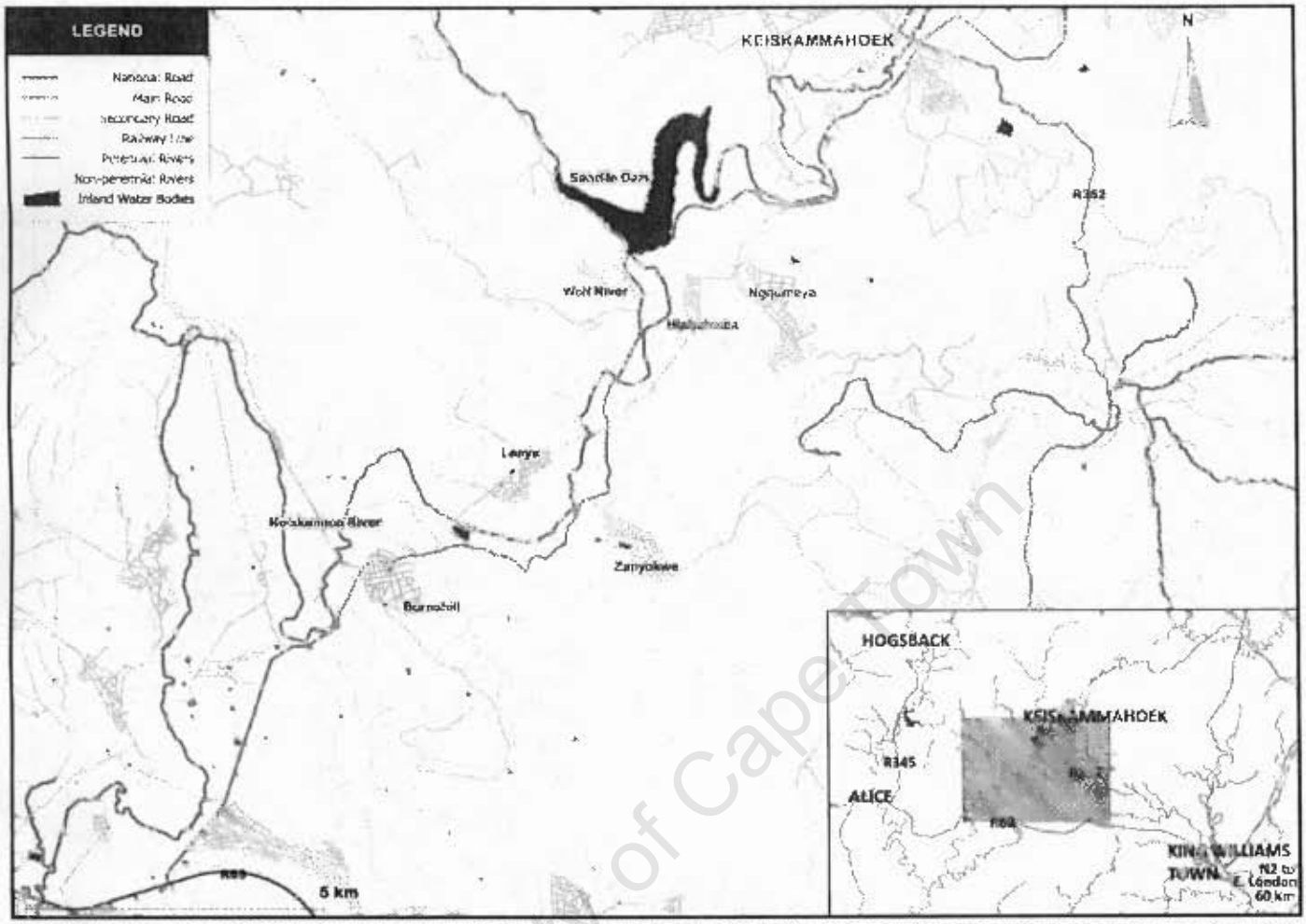

Figure 4: Map showing Masikhanye area of jurisdiction (created with data from Chief Directorate of surveys and mapping)

4.7.2 eDikeni WUA area

eDikeni WUA is located in the upper catchment of the Thume river. It is much larger and consists of about 30 to 40 villages in and around Binfield Park Dam as can be seen in Figure 5. All of these villages are located inside the Nkonkobe local municipality. Local farmers, comprising of mainly females from different small farming projects, requested that an association be set up to improve water supply and management of their projects as well as make use of surrounding defunct irrigation schemes. Establishing the WUA was then initiated by DWAF. Their constitution has since then been submitted, approved and gazetted (Government Notice No. 991). They meet regularly in Alice and are currently at the stakeholder engagement stage before the election of a governing board. They are also in the process of writing up business plans for their farming projects and irrigation schemes.

The communities within the study areas are the rural poor whose livelihoods largely depend on farming. The land and natural resources are predominantly state owned but access and ownership is in many villages subject to traditional governance. Water resource supply is available for use but infrastructure for access is poor. These are some of the main characteristics that highlight the need for effective local level management of water resources in the study area. The next chapter assesses how conducive the characteristics in the study areas are for successful local level management.

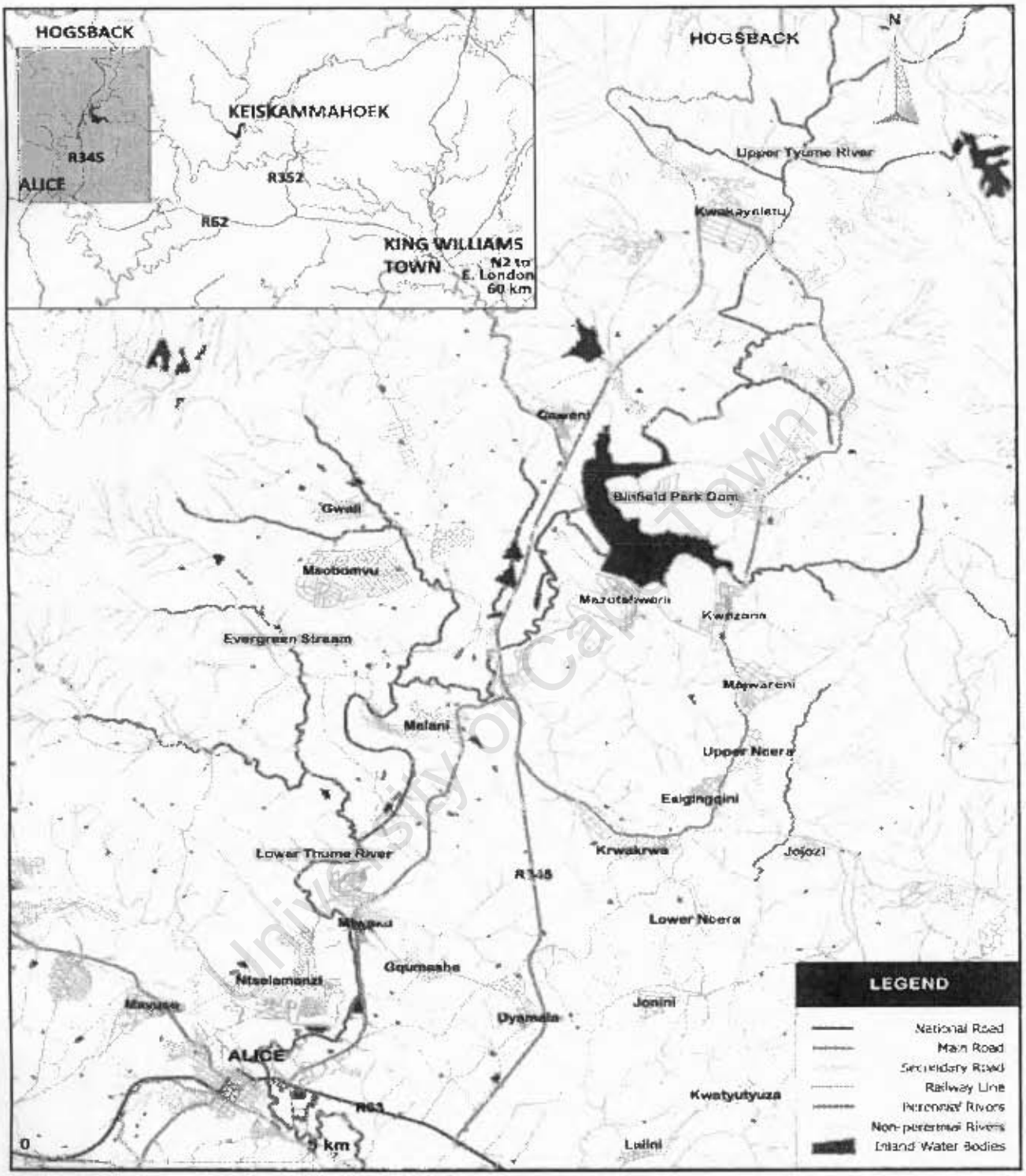

Figure 5: Map showing eDikeni WUA area of jurisdiction (created with data from Chief Directorate of surveys and mapping)

5. PERFORMANCE OF WUAS AGAINST CRITERIA

Using information gathered from the two case studies including interviews with key informants, participatory workshops, and observation, the two WUAs institutions will now be evaluated against Shackleton's criteria for successful local level resource management institutions. These criteria will be assessed under the broad headings provided by Shackletons framework namely, nature of the resource, nature of the resource users, institutional issues, nature of rules and regulations, economic issues and policy issues. Each section will begin with a brief overview of what the broad criteria entails followed by relevant research findings related to the WUA institutions under investigation.

5.1 Nature of the resource

Certain characteristics of a natural resource allow for easier common property management. Clear-cut boundaries are essential for successful management so that exclusion of non-members is possible. The smaller the resource size the easier it will be to manage and monitor logistically. But more importantly a small area fosters a greater knowledge of its micro environments and builds onto a common understanding of the resource and its use. A technical understanding of the ecological properties of the resource is also essential so as not to overlook long-term negative effects of current use levels. A rapidly renewable resource is easier to manage as its replacement pressure is less. However, resource scarcity can provide incentives for collective action that promotes sustainable use and resource security. Similarly, when dependency on a resource is high, awareness regarding its use and current state is high. This encourages effective management and monitoring systems to be in place. Resources that have reliable indicators to measure its condition and the impacts of individual regular use raise awareness and encourage collective action towards sustainable use (Shackleton, 1998).

Water does not have clear boundaries as it flows into an area and out again. However, in both case studies water is stored in dams and water infrastructure where only members of the WUA, that have a water licence, are granted access for farming or enterprise purposes. The Masikhanye WUA is still in a relatively early stage of establishment and farmers are still trying to obtain water licences. Non-members are excluded by way of licenses but it is more complex in rural areas as observed in both of the WUAs. Illegal connections are widespread in the area and provide an inroad for non-members. Some villagers in both sites suggested that traditionally water is seen as a customary right as it comes from the land off which they live and therefore a license system may not work. The size of water as a resource also poses problems. eDikeni has a larger watershed and controlling activities that impact on water supply in large area is difficult. Furthermore education in both study sites is very low therefore the flow of impacts from polluting activities through the water cycle not understood. For example villagers using chemicals to dip their livestock in the catchment area do not think that these chemicals will enter the river system. The NWRS has attempted to make areas under the jurisdiction of WUAs as small as possible but eDikeni and Masikhanye are both relatively large.

Water renews itself very rapidly making it easy to manage but scarcity is an issue. As mentioned earlier the study area has surplus water. Even though this surplus supply exists, farmers in both WUAs made it clear that the process of accessing water for use is a problem. In Masikhanye farmers complained that the water pipe infrastructure to their fields was not sufficient and most of the pipes were not being maintained and

therefore damaged beyond use. In eDikeni some farmers had no piping infrastructure and used donkey carts to haul water from the river. Once access is gained the perception of water scarcity may fall away. The dependency on water in both WUAs is extremely high as it is essential for farmers who rely on their crops not only for income but for survival. Water use and the state of its condition is currently not monitored in both WUA areas. Water supply to individual farmers in the study area is not being monitored and neither is supply to individual households, therefore there is no feedback to water users and the opportunity to raise awareness is lost.

5.2 Nature of the resource users

The smaller the user group is and the closer they reside to the resource the better. If user group size is small then costs of decision making and communication are low, enforcement of rules is easier, and permitted access more visible. Moreover community cohesiveness and collective responsibility tends to be stronger. A higher degree of homogeneity also favours common property resource management and according to Ostrom (2002) the group must not be strongly divided by natural boundaries, different perceptions of long term use, cultural hostility, and different exposures to risk. If a community has had a history of cooperative success peoples trust in others' willingness to work together is high. One of the main characteristics of users for successful common property resource management is trust and reciprocity. People need to feel secure about long term commitment and promise keeping. This also requires rules regarding use and management to be clearly defined. As mentioned earlier the knowledge that people have on the resource is critical such as knowledge on ecological properties, supply vs. demand, impacts of long term use, and the relationships between these (Shackleton, 1998).

The user group in the two WUAs display some characteristics that are not conducive to collective action. A key finding from research was that trust within water users and also between water users and government is lacking. The research showed that in the study area education and knowledge of water as a natural resource is poor as well as a high degree of confusion over the rules regarding access and conservation exist. The user group size, especially in eDikeni, consists of many villages and therefore very large. The proximity of residence to the resource was generally found to be a far walking distance. The lack of trust in many rural areas is a problem as suspicion over the motives of others is often rife. Trust has been broken down in the past by forced removals and the erosion of social relations. Apartheid fostered mistrust between people and especially between communities and their traditional leaders. This said, the research showed that community trust of the traditional leaders was very site specific. Some leaders are well respected and have built up trust through past actions while other areas tend not to recognise their traditional leaders in community action and governance.

Knowledge of the water resource in these two areas and how it should be used by the communities has been passed down through generations but few understand the water cycle from a scientific perspective. This understanding is important but education is lacking in these rural areas due to past inequities and inadequate government resources. An example is that stock farmers in both study sites often do not recognise that releasing the dipping waste into the ground away from the river would affect the water supply. Poor education and large group size ties in with the lack of awareness and general understanding of the rules around water access. Community members in both these areas are not sure who has rights to access and who exactly the WUA

institution was set up to serve. Conservation related regulations were non existent in both study areas and the vast majority did not know what actions would impact on water supply.

The WUA institutions in the study sites also have characteristics that promote collective action. In both communities it was found that they have experienced successful collective action in the past, the degree of homogeneity is high, and a water license system is in place. Regarding past collective action research showed that church groups in eDikeni have worked together on farming projects before the WUA was set up. In Masikhanye farming co-opts were working together in part to revitalise the Zanyokwe irrigation scheme. Areas where traditional governance is still strong have regular meetings, 'imbizos', with the whole community to discuss issues and work through them. These 'imbizos' are held regularly in both study sites and show that there is good communication within the community.

Additional factors favouring collective action include a relatively high level of homogeneity amongst resource users in the study sites exist. Cultural hostility is minimal if not non-existent, as too is different exposures to risk. In terms of eligibility to water access, even though illegal use and confusion over rules of use and membership is high in the study sites, the WUAs still have the license system in place which grants legal rights to use water.

5.3 Institutional issues

Institutional issues are important not only to ensure that the WUA fits into an existing network of institutions but also to ensure that it focuses on developing key aspects that will improve chances of success. Securing ownership for users and ensuring that their legal claim of access to water will be sustained, is essential. It is advisable to get people involved that have had prior experience in collective action such as village committees, business organisations, or ideally anyone who has been involved with the management of other common pool resources. It is also important to have a local legal entity that can enforce sanctions as well as a higher body to get both legal and resource support. This helps local communities with difficult decisions that could break down social cohesion. The local institution must also be flexible to change its structure when the environment around it changes. If the resource area is large, smaller nested institutions may help to manage the resource area more effectively (Shackleton, 1998).

Every institution has always got a better chance of success with a good leader who can be a role model, ensure fairness, empower people to be aware of real challenges in their life, convince people that they can benefit from group action as well as mobilise this action, and finally enforcing rules while managing conflict.

Many of these institutional criteria described above are not in place in the WUA institutions examined. These include insufficient outside facilitation and support in establishing the WUAs, lack of enforcement mechanisms, conflict between traditional and government authority systems, an inflexible institutional structure, and a lack of good leadership.

The process of facilitating the establishment of these two WUAs is currently being undertaken by DWAF but progress has been very slow. The research showed that regular communication between DWAFs facilitator and Masikhanye is a problem due

to a far travelling distance existing between the DWAF office and the study site, communication technology in the rural areas is very low, and DWAFs human resources are stretched over various projects. However the WUA in eDikeni received additional support from the department of agriculture with extension officers living in study area giving more regular support. The structure of the NWRS is such that WUAs are the local level institutions within a tiered network of supporting institutions namely the CMA and WMA. But, in WMA 12 no CMA has been established yet. Both case study WUAs therefore have to rely on DWAF for support regarding facilitating establishment, providing necessary training to the WUAs committee members, and to monitor progress. However, interviews suggested that DWAF already lacks monetary and human resources to be completely effective.

The areas under the two WUAs are large which makes legal enforcement of water access difficult. Currently there is no monitoring of water use in the two areas and therefore no feedback is possible. This undermines the WUAs accountability and the ability to evaluate its progress as a sustainable institution. With the introduction of a state governance system, the traditional authority system in this area is threatened. In the study areas, villagers were not clear if the main authority rested with the traditional leader or ward councillor. This leaves room for conflict

Regarding the institutional structure, DWAF has drawn up a set of very rigid guidelines of functions and rules that allow little room for community developed rules. Moreover the WUAs constitution, and changes to it, need to be signed and approved by the Minister of DWAF. Not only does this take a sense of local ownership away from the institutions but the process is also extremely long. Evidence of this was seen in the eDikeni WUA where it took over 2 years for their constitution to be approved. The structure is clearly very rigid. As mentioned earlier, in section 5.2, trust within the communities and between users and government is lacking. This is a key issue that any local institution managing common resources needs to address, especially when the state is so intricately involved. Finally, leadership is problematic as it requires a clear understanding of the functions and purposes of the WUA, yet hardly anyone new exactly what these were. Shackltons criteria (see Table 1) show that in traditional areas leaders who are younger, educated, have been exposed to the outside world, and still show respect for the traditional system have been most successful. The two WUA had very different leaders one of whom was close to fitting this profile.

Some characteristics of the two WUA institutions favour collective action in these rural areas. These include providing secure access to water for users as well as having a basic level of local level organisational experience. Access to water is secured by attaining a license through these WUAs but many people in the study area still access water illegally. In both study sites, illegal use is not being monitored and enforcement is limited. Therefore illegal use will continue to occur and could detract from legal water users rights of access to water. An interview with an NGO in the area suggested that organisational experience amongst villagers in most rural areas is not usually the problem as organisations relating to health, religion, and farming are common, as seen in the study area. However, commitment to remaining on the committee so that building the skills and knowledge for effective water resource management is a common problem. This was evident in the Masikhanye interim committee where half of the members were leaving the committee. Moreover, many of the skills required to perform the functions set out in both WUAs constitutions are technical and generally exceed the capacity of villagers in the study area. Regarding local authority, once the

two WUAs are gazetted they have the authority to legitimise enforcement of user rights and operating arrangements. However enforcement over such large areas requires funding which is not available and difficult decisions could require a higher authority.

5.4 Nature of rules, regulations and sanctions

Rules are the backbone of institutions but the people who they influence need to believe in the principles behind them if they are to be effective. Past experience has shown certain characteristics of rules for common property resource management have been successful. Firstly, locals need to 'own' the rules by incorporating their own customary systems and beliefs. However technical knowledge is crucial and needs to be merged into locally derived rules. Flexibility is important to accommodate changing resource conditions. Fewer, more simple rules are not only understood quickly but easily transmitted and therefore become clear amongst the whole community. Unrealistic rules are often not adhered to and can undercut achievability of goals. Punishments must be widely understood and effectively carried out and to ensure fairness punishments must match the seriousness of infringement. Most importantly rules must be monitored and enforced to avoid free riding. If not then a common property management regime could fall into an open access regime allowing for overuse and deterioration (Shackleton, 1998).

The nature of rules that promote successful management unfortunately do not compare well with those existing in the case study sites. Firstly, in the design and implementation of the NWRS, the research showed that traditional authorities in the Eastern Cape were sidelined. The state created a rigid set of guidelines for the implementation and establishment of WUAs allowing little room for flexibility and incorporation of customary systems and rules, as explained earlier. It is a state dominated process. The rules are therefore more technical and the research showed that community members in the study sites struggled to understand the rules.

Approaches to monitoring and in the two study sites are also not appropriate for local level collective action. Key issues in both WUAs are that many users do not know the rules for legal water use, and moreover, illegal use is not considered a big issue in the community. Monitoring of illegal use is not done very diligently and where illegal use has been identified by the general public or the WUA, not much has been done about it for a number of reasons. These reasons include that the community is empathetic towards farmers because water access is necessary for survival. Costs are also incurred in reporting illegal use while fear exists of resentment from the offender if reported. For these reasons, successful resource management systems often use 'official' monitors appointed by the local institution. But generally these officials need an incentive to take their job seriously which most likely involves costs. The support of the CMA or local authorities could help with enforcement but this does not currently happen. The WUAs in the study sites are however, not fully up and running and therefore future plans for enforcement and monitoring are still being developed.

5.5 Economic issues

Some important economic concepts that relate to local natural resource management are discussed in this section. Economic incentive is a crucial aspect of common property resource management that cannot be underestimated. Perceived benefits of adhering to institutional rules must exceed perceived costs of joint action. The resource must also have a high value placed on it by locals for their economic and

social survival. Benefits from a common resource must also be distributed equitably which includes equating benefits received to individual effort of input. Finally the higher the value of the common pool resource the higher the incentive is to conserve it (Shackleton, 1998).

Unfortunately, many resource management regimes only create benefits in the long term and locals often require immediate compensation for efforts they put in if they are to participate. However, in the two study sites the WUAs do provide farmers needing access to water immediate benefits are if they join the WUA. A water licence is obtained through the WUA and if the farmer is previously disadvantaged then they are eligible for subsidies. All the farmers in both WUAs fall into this previously disadvantaged category. Payment for the water they use will be free for the first year and will gradually increase until they are paying the full amount after five years. In addition, the WUA is designed to pool community resources, such as knowledge and equipment, together so that individual costs of access are minimised as well as individual risk. Committee members and farmers also receive free training and capacity building to perform their tasks more efficiently. For example, the eDikeni WUA is currently assisting members with the development of business plans. In Masikhanye, with the assistance of DOA, farming skills are being developed and farming equipment is shared. A major problem arises with the fact that water supply and quality is influenced by all activities in the watershed area. Managing activities in this watershed by non-members is difficult because they have no economic incentives to restrict their activity. For example, a stock farmer requires grazing land for his cattle and overgrazing by his cattle could affect runoff and therefore water quality. They have no incentive to restrict their grazing. Activities, such as this, need to be monitored and regulated to maintain a healthy catchment and a sustainable water supply. Restricting these activities that locals rely on for income and survival is difficult. Catchment management and conservation is largely the responsibility of the CMA but the CMA is non-existent in the study areas.

Regarding equitable distribution of benefits, it is important to negotiate clear contracts for distribution before benefits appear. If not, conflict often arises and the powerful elite usually end up appropriating an unfair portion. In terms of creating a high value for water, the resource value is directly related to how much money farmers get from trading produce. DOA is currently helping farmers improve production and getting markets for their produce. Without steady access to water, production of crops will be low and thus income will be limited. Therefore a high value is placed on water by emerging farmers in the study area. The incentive to conserve water is high.

5.6 Policy issues

Political issues and government support play a key role in developing successful local institutions. The state needs to recognise common property rights as it does private property to minimise external threats. The state should not only protect local rights but facilitate and support the development of local organisations. Donor agencies and NGOs can also have a crucial role to play in capacity building, facilitation, and training. They can also help government identify balances between common property management regimes and other resource regimes (Shackleton, 1998).

Once the Minister gazettes the WUA constitution, it becomes a local legal entity thereby recognising the water rights that its members have. But the process of establishing these WUAs has been very slow and members in both WUAs have lost

interest. DWAF in the Eastern Cape lacks resources, and in addition, the CMA has not been established yet. NGOs have the expertise, experience and time for providing intense facilitation and support yet using NGOs has not been utilised by DWAF in either of the case study sites. In these two WUA areas, the state is currently playing a very dominant role instead of taking on more of an enabling and supportive role.

5.7 Summary of key findings

In the two case study WUAs, many characteristics were not conducive to successful local level management. Both of the areas under the jurisdiction of each WUA were very large creating difficulties for monitoring and enforcement of water access. However no monitoring or enforcement was even in place. Therefore feedback on water usage was weak, and no enforcement allowed for illegal use and uncontrolled catchment activities to continue. A lack of trust within the communities as well as between water users and the state was a key finding that inhibits social cohesion and co-operation necessary for common resource management. Water users also struggled to understand the functions and purposes of the WUAs as well as basic scientific concepts of the water cycle. Effective participation in the establishment and management of the WUA by villagers was therefore limited. Institutional characteristics of the both WUAs are not promising. The CMA - the main supporting institution to the WUAs - has not been established yet leaving all supporting responsibilities with a resource short DWAF. Facilitation and support from DWAF, especially in Masikhanye, is therefore not sufficient. NGO's with experience and expertise in local development have not been utilised thus far. The WUA establishment process has thus far been dominated by the state and the development of rules and regulations has not been very inclusive. The rules are also relatively inflexible. Political tension between the traditional authorities and state authorities is evident.

A few characteristics have been found to be conducive to successful local level institutions. Homogeneity of the user group is strong promoting co-operation as needs tend to be similar. Regular traditional 'imbizos' in the two WUA study sites also showed good community communication. Incentives for small scale farmers to join the WUA are good. If they join the WUA their water bills are initially subsidized, they can obtain a water licence to access water legally, and it is likely they will receive farming support from the WUA. However, incentives for other community groups to join the WUA are not evident.

6. DISCUSSION

6.1 State held control

There seems to be a distinct theme arising around the amount of control and power that the state is willing devolve, or more so the lack thereof that seems to be undermining the possible success of WUA institutions. This theme is embedded in a number of issues mentioned in section six including, the rigidity of the rules within the WUA implementation guidelines and DWAF's facilitation and implementation strategy.

The success of local institutions relies on the rules being developed by the resource users themselves. However the guidelines developed by DWAF for the establishment and implementation of WUAs are rigid and do not allow for much flexibility. And where flexibility does exist to change rules laid out in the WUA constitution, these changes must be approved by the Minister, which as the case studies showed can be a lengthy process. The ownership of rules currently lies with the state which goes against CBNRM principles and is likely to discourage local participation.

The implementation approach adopted by DWAF is also contrary to IWRM as well as CBNRM principles, specifically the need to engage all stakeholders. The purpose of stakeholder engagement is to truly acknowledge what interested parties have to say. Not only because it is a legislative requirement but because stakeholders are more likely to comply if they are involved and their opinions will also most likely add value. Understandably, DWAF in the Eastern Cape is under-resourced and approaching all stakeholders is unrealistic. But, involving key stakeholders is essential and would help reduce wasted resources by integrating stakeholder's inputs throughout the process instead of through a more costly "trial and error" process. For example, the House of Traditional Leaders (HOTL) was not approached by DWAF regarding the development of the NWRS and development of WUAs. Political issues obviously exist between the two governance systems and exclusion of traditional leaders in these new governance processes is likely to worsen the relationship. This could possibly interfere with successful implementation of these WUAs given the traditional leaders status and role in some of these rural communities. HOTL could have helped DWAF understand the local conditions, customary systems and rules and how these could be incorporated into the new water resource management strategy. For example, DWAF could have used existing traditional communication lines, such as the 'imbizos', to create awareness and understanding regarding the purpose of the WUA institutions. DWAF could have saved resources in the long run by using more resources initially to involve more stakeholders in the planning stages.

DWAF has also opted to facilitate the process of establishing the WUA. Yet they know they are under resourced to do so effectively. They are obtaining help from the Department of Agriculture (DOA) which has many agricultural extension officers in the field. However the importance of facilitation must not be underestimated, especially in the less developed rural areas where education is low. Building capacity within a local institution to sustain itself is a time demanding process that must be sustained over a long period. The current level of facilitation is nowhere near sufficient, largely due to the lack of human resources, and yet DWAF have not looked at the option of using NGOs to fill this role. Various NGOs have experience in successfully setting up local institutions using principles of CBNRM. Locals are also more likely to trust an NGO that has worked in the area because they are impartial

and may have worked in areas previously. NGOs also tend to emphasise issues of participation, equity, local knowledge, and sustainability more diligently because the NGOs performance is measured on these factors. DWAF on the other hand are under tremendous pressure to fulfil a mandate and need to stipulate a given time period for completing a task. The need to fulfil this mandate as soon as possible may be affecting the level of community involvement in these WUA establishment process.

Understandably, the CMA has not been setup yet in the study area and DWAF are taking on many of their responsibilities. Whether the WUAs should have been set up before the CMA was established is another vital question that only time will answer. Nonetheless, DWAF has opted to set up the WUAs but the research suggests they should be looking at the possibility of outsourcing facilitation to institutions which have the expertise, experience, and resources required to ensure success.

6.2 The complexity of managing of water

The nature of water is such that it is difficult to determine its boundaries. The water cycle is a continuous flow where impacts on water quality and quantity can occur anywhere within this cycle. Water flows from one user to the next carrying with it the impacts of previous users. According to Shackleton (1998) these characteristics make the management of water extremely difficult.

With reference to South Africa's water policy, a WUA is a group of individual water users who wish to undertake water-related activities for their mutual benefit. In the case study area, the two WUAs were initiated by farmers for the mutual benefit of farmers to access water. WUAs also need to ensure the sustainability of the resource which requires conservation and management within the entire watershed area. Most resource related activities within the watershed area effect water supply and sustainability and therefore these activities need to be managed. However a problem of economics arises. Value addition needs to go hand in hand with conservation enforcement to ensure sustainability. The farmers are likely to abide by WUAs conservation rules because effective conservation secures a steady supply of water which in turn contributes to a steady output of produce, and therefore income, for the farmers. On the other hand a cattle farmer relies on grazing land for income. The WUAs conservation rules may require farmers to restrict their activities as overgrazing negatively affects water quality and supply. However, cattle farmers have no incentive to restrict cattle grazing since there are no tangible benefits to them. A successful sustainable programme should ensure that individual short term benefits gained must outweigh the costs of restricting such activities, whether they are part of the WUA or not.

As mentioned above, water management involves all activities and people within a watershed area. The NWA allows for groups with mutual interests to establish a WUA. This strategy does not combine well with the type of management the nature of water requires. The NWA stipulates however, that a WUA must have community wide representivity which compliments the all inclusive management required for successful water resource management. As suggested in Shackleton's criteria, where the area of resource management is large it may be appropriate to create nested groups. An all inclusive WUA could be more successful if it were to have these nested groups of mutual interest. These nested groups could be for example farming co-operatives, household water users, stock farmers, and even a group for sustainable management to enforce rules and supply 'official' monitors. Each nested group would

have a representative on the WUA committee to raise concerns and suggestions from their particular mutual interest group. The WUAs could then become more 'all inclusive' institutions which could provide input to watershed management. They would provide more accessible channels through which any community concerns can be voiced as well as through which education and conservation principles can be directed.

6.3 Participation, capacity and education

The capacity of the WUAs to perform critical functions as well as the community's capacity to understand and implement the functions and rules of the WUA, is a critical issue. The question of 'why is capacity falling short and how can this be improved' is at the centre of this discussion. The answer is closely linked to the level of participation of users in these deliberations and their involvement in education and awareness raising programmes and initiatives.

As emphasised in earlier sections of this study, a key component to successful collective action lies in the simplicity and source of the rules. Currently, the communities do not understand the purpose of the WUA and the rules are too complex to understand, largely because they have been developed by the state. There are a few implications that result. Firstly, the community does not feel that they own the process and are therefore less likely to co-operate. They need to participate in designing the rules so that they are understood from the users' perspective. Secondly, complex rules that cannot be understood manifest mistrust and suspicion which are already issues in ex-homeland rural areas. This lack of trust undermines collective action because their lack of understanding makes them sceptical and therefore often become unwilling to co-operate. The involvement of traditional authorities could help incorporate appropriate traditional and customary rules which users already understand. Rules need to be made to match the educational level and way of thinking of local communities so that trust and reciprocity are achieved.

The criteria for success suggest that more knowledge of the resource results in more understanding over its use. Generally, the villagers do not understand the more technical and scientific aspects of the water cycle and therefore cannot fully understand how their activities impact on the water cycle and the sustainability of water. Water in these rural areas is a scarce resource upon which they have a high dependency for survival. Given this situation, users will generally be willing to participate in collective action towards its sustainability to ensure their own survival. However, it is important that the basic scientific concepts of the water cycle are understood by the users. This will help users understand how their day to day activities may impact on the water cycle in the short and long term, and how to avoid or minimise these impacts. Hopefully the benefits that accrue to them in participating in conservation efforts will also be recognised.

Another key challenge that WUAs need to overcome is the issue of illegal use and the need to increase incentives to encourage people to become part of the WUA. Illegal use could seriously undermine an individual's or communities drive to become part of the WUA. A farmer who is accessing water illegally is subtracting from the benefits that a licensed water user has by being part of the WUA. Instead of being on the WUA and paying for water you could be accessing it for free. If this "free riding" is widespread it could lead to resource abuse and degradation. So far, illegal use has not been addressed because WUAs do not have the capacity for intense monitoring and

enforcement. The research suggests that 'official' monitors from the community be appointed, because relying on general water users to make reports is asking them to incur both social and monetary costs. The rules that these monitors enforce should be simple and widely understood. Violations should have social sanctions and where necessary have the support of local authorities. However for monitors to take their job seriously incentives of social status or other benefits must exist. The local Water Board could increase the capacity of the WUAs to fulfil this monitoring function by pinpointing certain areas where water is unaccounted for. By ensuring illegal use will not be tolerated farmers are more likely to join the WUA to access water legally.

7. CONCLUSION

The two case studies investigated revealed important insights about the conditions in which WUAs and local level rural institutions in general operate. The rural communities largely depend on subsistence and small scale commercial farming for survival. The working class and educated generally live in built up areas leaving rural areas mostly populated with the younger and older generations. Basic services are and education are lacking. The need for government help is evident yet the state often lacks the financial and human resources required to assist in developing sustainable local institutions.

When compared to Shackleton's criteria for successful local level management, the two WUAs do not currently fit very well into an environment that favours successful establishment and operation of local level institutions. However, a few conditions present in the WUAs suggest that the potential exists for successful local level institutions to be developed. A key focus will need to be on addressing the obstacles to successful local collective action and facilitating these changes over time.

The process of establishing fully functional and successful WUAs face many challenges. These include overcoming the complexity, rigidity, and lack of community ownership of the rules and regulations through increased stakeholder engagement. The lack of capacity of the WUA to perform functions of monitoring and conservation management also needs to be addressed to encourage users to see the benefits of joining the WUA. Facilitation during the establishment of the WUAs in rural areas is extremely important and time consuming. If the state does not have the expertise, experience and resources to perform this function effectively, then they should look to outsourcing this activity.

The process of establishing these two WUAs was characterised by a top-down state dominated approach which creates an unlikely environment in which local level institutions, such as a WUA, can become sustainable. Successful local level institutions require the participation and involvement of all resource users and other key stakeholders in the design, establishment, and operation of the WUA. A key factor in determining the future success of these WUAs will be whether government decides to continue with a product driven inflexible state dominated approach or whether they can move towards a more inclusive process driven approach.

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