



**THE FACILITATION OF TRADE IN  
WATER USE ENTITLEMENTS BY  
THE NATIONAL WATER ACT IN  
SOUTH AFRICA**

**Conningarth Economists**

**WRC Report No. 1297/1/04**



**Water Research Commission**



***THE FACILITATION OF TRADE IN WATER USE ENTITLEMENTS  
BY THE NATIONAL WATER ACT IN SOUTH AFRICA***

**Report to the Water Research Commission on the Project "An Investigation Of  
The Supportive Role Of The Market Mechanism In Implementing The Provisions  
Of The New Water Act In Order To Achieve Efficient And Equitable Water  
Utilization"**

by

**CONNINGARTH ECONOMISTS**

|                      |   |                                                                                  |
|----------------------|---|----------------------------------------------------------------------------------|
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WRC Report No. 1297/1/04  
ISBN No. 1-77005-204-6

**AUGUST 2004**

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## ACKNOWLEDGEMENTS

This research report is the result of a project funded by the Water Research Commission. The Steering Committee responsible for this project consisted of the following persons:

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| Mr. C. Williams      | Economic Project Evaluation (Pty) Ltd    |

The Steering Committee provided valuable inputs in giving direction to the research project. Many members of the Committee willingly shared their expertise with the project team on many of the complicated issues encountered. Their contributions are appreciated.

Officials from the Department of Water Affairs and Forestry were very helpful. Special mention must be made of Messrs. W. Enright, P.F. Pretorius and J. Wessels.

The project team for Conningarth Consultants was Prof. J. A. Döckel, Mr. D. Mosaka, Dr. D. Mullins, Ms. G. Parkies, Mr. C. Sellick and Adv. H. Thompson.



## EXECUTIVE SUMMARY

The approach to water management has changed drastically since the 1990's. This new approach was prompted by the fact that the demand for water is steadily increasing while the opportunity for developing new sources of water supply becomes scarcer and the remaining potential sources are becoming increasingly more expensive to develop. In the face of this potential imbalance between supply and demand it is logical to emphasise ways in which the existing supply can be used more efficiently. It required a shift from the previous philosophy that water is a free good that can be used without regard to its scarcity value to one where water is considered to be an economic good. As such the allocation and use of water should have a price attached to it that must reflect the scarcity value. The old centralised bureaucratic water allocation procedures should be replaced by decentralised procedures accompanied by user participation and a role for the market mechanism. The market mechanism has to fulfil its function as an efficient mechanism for allocating water between competing uses.

It is against this background that the new approach to water management in South Africa must be seen. This paradigm shift is one of the factors that informed the South African water policy reformulation process in the 1990's and that resulted in the National Water Act, No 36 of 1998 as amended (NWA).

The point of departure for this study is therefore to determine to what extent the NWA reflects this philosophy as far it relates to the use of the market mechanism for allocating water use.

It is assumed that the appropriateness of the market mechanism, as far as water allocation is concerned, has been established and that it is not necessary to repeat the arguments justifying the role of the market. The concern is therefore to determine the institutional requirements that are needed and subsequently to determine whether the NWA provides for such institutions.

Institutions refer to the rules guiding water trade such as the legal system, financial regulations and property rights that guide the operation of a market in water use.

The nature of the institutional requirements is derived from international case studies. Use was made of an investigation of the experience obtained from the Colorado Big Thompson (CBT) project, the western USA, Chili and Australia.

The institutional requirements can be categorised as those related to;

- a clear description of each water use entitlement and the conditions attached to its use,
- procedures according to which trade in water use entitlements can take place,
- availability and access to information on trade possibilities, and
- an administrative and enforcing system to implement trade in water

use entitlements.

The lessons that can be learned from the experience in the countries mentioned are also listed. The major conclusion reached, based on their experience, is that a market in water use cannot be left purely to the interaction of market forces. The existence of third party effects according to which individuals not directly involved in the transaction are influenced by it as well as other social concerns related to water use require a degree of market regulation. Given this fact, the extent to which a market can perform its allocation function is dependent on the degree to which the regulatory interventions allow the market to function.

Regulatory interventions affect the cost of trade. In the case of trade in water use such costs are related to the physical and management infrastructure needed for the trade as well as the policy induced transaction costs. The policy induced transaction costs depends on the approval process and also the level of stress that a particular source is subjected to. The greater the degree of stress the higher is the probability of third party effects and the more rigorous the implementation of the approval process.

The principles that inform South Africa's new approach to water management and specifically the provisions contained in the NWA that facilitates a water market is the next issue to be tackled. A detailed evaluation of the legal issues contained in the NWA as it relates to a water market is made. It is concluded that although reference is never made in the NWA of a water market, it contains no provision that prevents its functioning.

As the study progressed this conclusion was confirmed in practice. Not only is there no legal limitation on water markets or the institutional requirements needed but that a large number of transactions, both temporary and permanent have already taken place in terms of the new legislation. Sections 25 (1) and Section 25 (2) provide for ways in which temporary and permanent trade in water use entitlements can occur.

The way in which trade is taking place at present and in which it is supposed to unfold in the future are subsequently investigated. The approach to water management as outlined in the NWA cannot be implemented immediately. The reality is that the transformation from the old to the new approach involves a large number of time-consuming steps. Water use as practised under the old act is declared an existing lawful use. The first step is to register such existing lawful uses. Subsequent steps involve, inter alia, the verification of such existing lawful uses in order to issue a license either in terms of a compulsory licensing procedure or an ad hoc procedure.

However, before licensing can commence, criteria must be put in place that will guide the conditions attached to licensed water use. Criteria, such as the Reserve requirements, class and resource quality objectives, international obligations, future needs and inter basin transfers will determine the quantity of water, from a specific source, that can be licensed.

In addition, the NWA provides for a number of new administrative structures such as Catchment Management Agencies (CMAs) at the regional level, Water User Associations at the local level and various advisory bodies to be created as needed.

The draft National Water Resource Strategy (NWRS) 2002, contains a plan as to how and when these required procedures and structures will be instituted. It will take considerable time before all the structures are in place and fully operational. For instance, according to the NWRS it will take up to twenty years for the licensing procedure to be completed.

In the meantime until all structures are in place the changing needs of the country with respect to water use must be accommodated. Provision is therefore made for an ad hoc procedure to deal with license applications for new water use or existing water users. The ad hoc verification of an existing individual water use authorisation is necessary in order to license the use. The license, in turn, is needed before an application to trade a water use entitlement can be considered.

Each application to trade must then be assessed in terms of the Section 27 conditions in order to determine if the effect on third parties is of such a nature that the trade can commence.

Until such a time as the CMAs are operational, applications to trade in water use entitlements will be approved centrally by the Department of Water Affairs and Forestry (DWAF) involving the clusters and the regional offices for the preparatory work.

Although all the structures are not in place, trade is at present taking place reasonably satisfactorily judged on the basis of the time it takes to approve an application. Implementation problems, many of which are caused by the newness of the system and others caused by processes that must at present be followed to provide for the licensing of water use, will decline as the new approach becomes more familiar. Once water use entitlements are licensed the time needed to consider routine applications to trade should not be a factor that inhibits trade.

Since the necessary prerequisites are, by and large, in place the market in temporary as well as permanent trade in water use entitlements will function better as the various provisions as contained in the NWA unfolds and administrative procedures improve.

In the case of the temporary trade of water use entitlements, third party effects are not prominent and therefore the approval processes are less extensive and can be approved or rejected fairly quickly. This function is delegated to the local level. Temporary trade is very significant in Australia and the USA where sophisticated local markets have developed. Although temporary trade does occur in South Africa, there is room for the further development of this market at the local level. It will be necessary to investigate why it has not taken on larger proportions.

The study is concluded with a summary of the critical issues and recommendations for improving the market in water use entitlements. With regard to the critical issues it is clear that the market does function because a mechanism has been created to deal with it whilst all the required criteria and structures are not in place. Trade will become a more frequent occurrence when all the structures are in place and the required water use entitlements are licensed.

Given the fact that the new approach is in the process of being implemented recommendations for the better functioning of the water market must be seen against the background of:

- The newness of the system and the so-called teething problems encountered. Once all the criteria to approve an application for a license to use water are in place permanent trade in water use entitlements will become more of a routine matter than at present.
- The inevitable scarceness of knowledge and expertise to deal with the required administrative procedures, and
- The need to protect society, the water source, the environment and other users.

The recommendations relate to considerations about the unease about some of the consequences of trade. It is argued that reliance must be placed on evaluation procedures to take both private and social costs and benefits into account. Administrative aspects are influenced by the fact that all the structures provided for in the NWA are not yet in place and it is therefore recommended that it be evaluated periodically as the process unfolds. For water markets to function properly all the relevant information is needed, and more could be done to provide such information. Although a large number a permanent and temporary transactions have taken place it is recommended that possible impediments to trade, especially temporary trade requires further attention. Lastly the new decentralised process of dealing with water management, which includes trade, is dependant on the availability of skilled personnel. It is proposed that a human resource development strategy be implemented to deal with this potential bottleneck.

The project accommodated capacity building as prescribed in the Terms of Reference, the report is attached as Appendix 6.

## LIST OF ACRONYMS

|     |       |   |                                                |
|-----|-------|---|------------------------------------------------|
| 1.  | CBT   | - | Colorado Big Thompson                          |
| 2.  | CD:WU | - | Chief Director: Water Use                      |
| 3.  | CMA   | - | Catchment Management Agency                    |
| 4.  | CMS   | - | Catchment Management Strategy                  |
| 5.  | DGA   | - | General Directorate of Water                   |
| 6.  | DWAF  | - | Department of Water Affairs and Forestry       |
| 7.  | EIA   | - | Environmental Impact Assessment                |
| 8.  | GWCA  | - | Government Water Control Area                  |
| 9.  | NSW   | - | New South Wales                                |
| 10. | NWA   | - | National Water Act, No. 36 of 1998 as amended. |
| 11. | NWRS  | - | National Water Resource Strategy, 2002.        |
| 12. | WMA   | - | Water Management Area                          |
| 13. | WUA   | - | Water Users Association                        |

## **CHAPTER 1: INTRODUCTION**

### **1.1 BACKGROUND**

It is generally acknowledged worldwide that water is becoming more scarce and that the opportunities to develop new sources of supply is shrinking. It is inevitable that available resources will have to be managed more efficiently to satisfy the increasing demand for water. South Africa is in a similar position in this respect since the potential for new sources of water supply is limited.

This relative scarcity of water and ways to deal with it, led to the proclamation at the Dublin Conference (ICWE, 1992) that water should be treated as an economic good. This approach is reflected in the policy recommendations of the World Bank on water management (Saleth & Dinar, 1999). The advantage of a shift from a centralised bureaucratic way of allocating water to a more decentralised way is propagated. Such a decentralisation of water management should involve the participation of water users and the use of economic principles in directing the allocation of water among competing uses.

To implement such a fundamental policy shift involves an enormous amount of resolve on the part of the authorities. It entails the development of a new set of water policy principles and extensive consultations are needed to get agreement on these principles. The principles must then be formulated in the form of a draft Act to be scrutinised in the various legislative bodies and finally promulgated as an Act of Parliament. The last stage in this long process is the change of the administrative system to implement the new water management structure.

Notwithstanding the advantages of such a totally new approach it does not usually originate from within the organisation concerned. In this regard South Africa was in the fortunate position in that the initiative for change came from a very strong source outside the water sector. After the change to a new democratic government in 1994 all structures were systematically re-evaluated. It was necessary to ascertain to what extent they provide for the effective provision of goods and services that will enhance the objectives of good government to the benefit of all its inhabitants.

The water management structure was one of the many areas to be re-evaluated. An outline of the points of departure for a new policy approach was first published in a White Paper of DWAF, 1997 and was followed by the NWA.

## 1.2. OBJECTIVES OF THE STUDY

The objectives of this study as listed in the project proposal are;

- to determine the major concerns of DWAF in relation to the implementation of a market in water use entitlements.
- investigate the functions and procedures of the existing institutions responsible for water allocation and management. Specific attention will be given to their powers and the guidelines according to which they should operate with a view towards strengthening the role of the market.
- investigate and propose (if necessary) possible adjustments to institutional arrangements regarding water management to align them with the requirements for allowing the market to play a role in water allocation. Amongst others, the use of marketing agents, professionals, data bases as well as further administrative procedures will be considered.

In the planning stage of this project it was agreed that this study will concentrate on institutional aspects. For purposes of this project, institutions refer to the rules guiding water trade such as the legal system, financial regulations and property rights that guide the operation of a market in water use and not organisational structures. The emphasis will be on the legal/institutional aspects of water trading and it is not the function of the project team to formulate policy proposals or amendments to the NWA. The researchers must evaluate the challenges posed by a market approach to water management, analyse it and then make recommendations. The outcome of this process should result in the form of recommendations that can improve the functioning of the market.

It is assumed that the advantages of a system where the water market is allowed to function is a given. The merits of the market-based approach applied to water use have been discussed in numerous previous studies (Perry et al, 1997). A case will therefore not be made to justify a market-based approach to the management of a country's water resources. Instead it is taken as given that water use has some public goods characteristics that necessitate that the market must be directed to take externalities as well as relevant social factors into account. Given the need for some form of intervention in the public interest it is required that a balance must be maintained between the involvement of the authorities to protect the social good and leaving room for the market to perform its allocation function.

In order to address the question of what institutions are needed, the functioning of water markets as they exist in a number of countries are investigated. In addition the challenges faced in these countries in implementing a market approach are isolated and presented as factors to consider in the case of South Africa.

This analysis provides a basis for determining to what extent the required institutions have been created by the NWA. The organisational structures

provided in the NWA in order to support a water management system are only dealt with in so far as to determine whether they will support the implementation of the institutional requirements needed for a water market.

The NWA is now in place and provides the framework within which the country's water resources must be managed. This new framework must however take into account the rules and structures that pertained to the management of water resources under the old act. A switch to the new approach cannot occur immediately. Many of the provisions contained in the Act are not yet in place. Some, such as the provision of criteria within which a water resource can be utilised is crucial to the successful operation of the market. The draft NWRS contains an outline as to how the implementation of the provisions contained in the NWA will proceed over the next two decades in its final stages of approval.

Extensive consultations were conducted with officials of DWAF and other experts on the challenges faced as one migrates from the old to the new approach to water management. The way in which markets operate at present is not necessarily the way in which it will eventually function. It was therefore necessary to determine what steps are in place at present with regard to water trade and how it is planned to progress towards the eventual implementation of all the provisions contained in the NWA.

The primary requirement for a formal water market to operate in South Africa is that water use entitlements must be licensed. A license will describe in detail what the entitlement entails and how it can be used. In the beginning stages entitlements are not licensed and water use is authorised on the basis of an existing lawful use. The challenge will be to eventually authorise all the applicable entitlements to water use by a license. Considerable attention is therefore given to the mechanisms that have been created in the interim to allow for trade in water use entitlements while all the elements for the functioning of the market is not available. The way in which the market operates, at present, in one catchment is used to demonstrate the way in which an application to trade is handled in practice.

### **1.3. CHAPTER OUTLINE**

The study is divided into three parts namely the institutions needed, the institutions provided by the NWA and the implementation of the provisions of the NWA at present and how it will function in future.

Chapter 2 provides an analysis of the institutional requirements for the operation of a formal water market. This is done with the aid of the experience of countries where water markets already operate. Western USA, Chile and Australia serve as case studies that provide guidelines for discussing the rules needed for the successful operation of a water market. Based on the experience of these countries to establish such rules common



trends can be isolated.

Chapter 3 contains a discussion of the extent to which the provisions of the NWA facilitates the operation of a market in water use. The conclusion reached is that there are no impediments contained in the NWA that prohibit the use of a water market. In fact as the study progressed it was found that not only is there no problem in principle with the provisions of the NWA but trade in water use entitlements is already taking place under the new dispensation.

In Chapter 4 the reality that trade is already facilitated, led to an investigation of the mechanisms that DWAF has created to allow the market to operate while the changeover from the old to the new system is still in progress. The challenges posed by the situation where entitlements are based on an existing lawful use that must first be verified before there can be an application for a license needed for a trade in water use are discussed. The criteria and considerations as outlined in the NWA to assess an application for license is the central theme of this chapter. The organisational structures created and their role to support the trade in water use entitlements are discussed briefly. This analysis is concluded with a presentation of the statistics of the number of transactions that have taken place since the NWA came into force. The experience of buyers and sellers with the application process for the trade of water use entitlements in one catchment is also presented.

In Chapter 5 the various aspects are integrated and a brief motivation for each conclusion is presented. Recommendations about aspects that must be followed up to increase the efficiency of water markets are presented in conclusion.

## **CHAPTER 2:        *INSTITUTIONAL REQUIREMENTS FOR A WATER MARKET: LESSONS FROM INTERNATIONAL EXPERIENCE***

### **2.1.    INTRODUCTION**

Based on international literature (Saleth & Dinar, 1999) it would appear as if the emphasis on the management of a country's water resources has shifted significantly. This shift has occurred in the following areas;

- the development of new water resources to add to the available water stocks has been replaced by an emphasis on the more efficient use of available water and also on preserving the quality of water;
- water is no longer regarded as a public good but rather as an economic good; and
- centralised administration and regulation accompanied by bureaucratic allocation of water made way for decentralised allocation, the use of economic instruments and user participation.

These trends all point towards a greater role for the market mechanism. Water markets can provide economic incentives for water users, inducing the allocation and use of water according its real value and also enhance its conservation (Easter & Hearne, 1995). In addition, markets are usually more flexible than administrative allocation procedures. Users themselves can voluntarily decide if they want to buy or sell water. This action differs from the situation where a central authority administers the reallocation or expropriation of water rights. If such interventions are not done on a voluntary basis conflict can result.

Water markets can however not operate in a vacuum and an institutional framework is needed for the market to function. The institutional framework must be accompanied by adjustments in the areas of water policy, water law and water administration. A change of this magnitude cannot be achieved overnight and is most often not a smooth process (Saleth and Dinar, 1999). While it is perhaps easy to formulate and declare a new water policy, the promulgation of a new water law to facilitate the new policy, requires time and effort to take it through the required steps. The most difficult aspect is the creation of new administrative structures or to reform existing structures needed for implementing the new policies.

In South Africa the reform of the approach to water management has received considerable attention over the last decade (Backeberg, 1997). A new policy on water management outlined in a White Paper of DWAF, 1997 was incorporated in the NWA.

It would appear that in the South African case, provision has been made in the NWA to fulfil all the basic requirements for a market in water use entitlements to operate. No specific reference is made in the NWA regarding the role of water markets. Provisions in the NWA such as Sections 25(1), 25(2) and 26(1)(l) however allow for the possibility of the market to function. The real challenge lies in the next phase namely that of formulating the implementation structures, regulations/rules and procedures that will, amongst others, allow for the trade in the rights to use water. There are a number of steps that must be followed before all the requirements will be in place. The authorities have already made considerable progress towards the new dispensation but the task to get all the building blocks in place for the country as a whole is challenging.

The experience gained by countries where markets are functioning can provide valuable implementation guidelines for South Africa. It must however be kept in mind that knowledge about the requirements of an institutional framework that will facilitate the functioning of a formal water market is limited because;

- with a few exceptions, water markets have not been in operation for a long time
- studies of water markets from an institutional point of view do not get sufficient attention
- local conditions may require unique solutions

Given these qualifications the experience obtained in a number of selected countries where water markets are functioning will be investigated. Emphasis will be placed on the institutional aspects of water markets.

## **2.2. INSTITUTIONAL PRINCIPLES FOR A MARKET TO TRADE IN THE RIGHTS TO THE USE OF WATER**

For market forces to work optimally in an economic sense, water must like any other private good adhere to the requirement that property rights to the use of water must be;

- private and exclusive for the use of the owner only, with no influence on other parties and,
- transferable between parties

Secure entitlement is an incentive for sound resource utilisation. Freedom to exchange provides the flexibility to reallocate water use entitlements according to changing demand patterns. If a good adheres to these conditions, authorities should intervene as little as possible in the operation of markets and should confine its involvement to protect property, enforce contracts, reduce transaction costs and reduce barriers to exchange.

If the authorities want to play a more active role, the market will not function as well or in the extreme case not at all.

Water as commodity in its various applications does not in all cases fully adhere to the stated conditions. Water resource use can in certain cases be interconnected and the unregulated trade in water entitlements can affect other water users or the environment. Preventing or reducing these, commonly referred to as third party effects, requires institutions and rules which will impact on the functioning of water markets.

An additional motivation for government involvement is that water distribution systems often resemble characteristics of a natural monopoly and must be managed in the common interest of all parties involved.

Such government involvement in the public interest can increase transaction costs that eventually can inhibit the functioning of markets. The objective of interventions by authorities should be to address undesirable effects and especially third party effects of trade subject to the condition that transaction cost that result from its intervention should be minimised.

A formal market (Marino & Kemper, 1999) to trade the entitlement to use water requires the adherence to a number of conditions that include the establishment of the necessary institutions. Such institutional requirements can be classified under the following headings as;

- rights to the use of water (including its definition, initial allocation, measurement and return flows);
- contracting mechanisms;
- availability of and access to information; and
- an administering and enforcing agency.

The relevance of these requirements will be discussed with regard to the CBT project, a large government water scheme, where institutions were established with the purpose of allowing a water market to function. It represents a model against which the other country case studies discussed here can be measured.

Water for the Northern Colorado Conservancy District is provided by the CBT project. It provides for the transportation of water from the Colorado River on the western side of the Colorado Rocky Mountains to its eastern slope. The scheme was constructed to deliver 382 million cubic metres of water per annum and served as a supplementary water source to users.

#### **2.2.1 Rights to the use of water**

US government is the owner of the project and the water. The District has the right to use and allocate all available water. This is subject to the District

meeting its obligation regarding the repayment and operation and maintenance cost of the facilities stipulated in the repayment contract. The users get a permanent contractual right to use the allotted water.

#### 2.2.1.1 Initial allotment

The initial allocation of water use rights is based on the users needs and ability to make beneficial use of the water.

The project was constructed to deliver 382 million cubic metres annually which can vary annually due to climatic factors. Originally, based on its capacity, 310 000 allotment units (of 1 acre foot or 1215 cubic metres) were created and allotted irrespective of the quantity of water available each year. Each holder therefore gets a proportional share of the quantity of the water available in a specific year.

Applications for allotments were made by farmers, industries and cities.

No charge was placed on the initial allotment. The receiver of the allotment had to place a lien on the property to guarantee federal repayment obligations and the funding of sustainable operation and maintenance. This risk associated with the lien amounted to an implicit price. The federal repayment and operating expenses are covered by an annual assessment levied by the District paid by allotment holders based on the number of allotments they own.

Since the scheme made additional water available the allotments awarded are based on calculations of how much of the supplemental water can be put to beneficial use. Physical inspections of each farm were made to determine beneficial use before allotments were made.

#### 2.2.1.2 Types of allotment contracts

Three classes of allotment contracts namely class B for municipal use, class C for industrial use and class D for irrigation were issued.

Since a total of 310 000 allotment units were created, the allotment was specified in terms of an "acre-foot unit" which is specified as 1/310 000 of the quantity of water declared available annually by the District. The allotment units are therefore adjusted annually depending on the available water supply. There is no guaranteed delivery of a specified quantity of water. These units can be bought and sold in the market.

#### 2.2.1.3 Return flows

In the case of the CBT project the District decided to retain all rights to return flows. Return flows can accordingly be used by downstream users, at no cost, but no downstream user can acquire the right to the return flows. The downstream user therefore cannot be damaged or injured if the pattern or quantity of return flows changes. This provision ensures that transfers are free from the risk of lawsuits based on return flow rights and in that sense the functioning of the market is less restricted.

#### 2.2.1.4 Limits on ownership of permanent allotments

Limits on ownership rights can originate from historical, political or other considerations. In this case buyers must be able to demonstrate beneficial need and ability to use the water. Water cannot be acquired purely on the basis of willingness and ability to pay. The main reason being the Board's aversion to the concept of speculation in water or the potential development of monopoly positions in the ownership of contractual rights to use water.

Water for irrigation purposes is issued to a parcel of land. This parcel must have previously been irrigated.

Class B and C allotments are also restricted in the accumulation of allotments up to a gross annual supply equal to twice the demonstrated annual demand.

This rule is based on the need of cities to have access to a more secure water supply than is the case for agriculture.

Water cannot be sold to buyers outside the District because it was developed for the use and benefit of the District only.

#### 2.2.2 Contracting mechanisms

Contracts specify the permitted type of water use on a permanent basis. Annual use is not restricted to the lands, area or service specified in the contract. This allows for seasonal rent and transfer of water from one area in the district to another or from one class of service to another without incurring high transaction costs.

In the District a simplified procedure is in place for annual rentals, sometimes referred to as a spot market. Each owner's units is registered just like a bank account. After agreeing on the rental price, the buyer and renter

can send in a postcard to the District specifying the volume of rental, the source and the destination. It is thereafter dealt with in a similar way to a bank account. The district does not charge an administrative fee or a percentage of the rental fee.

For permanent sales of contracts for allotment units a more complicated procedure is required.

After agreement between buyer and seller, they submit an allotment change application to the District together with a small administrative fee. The buyer must demonstrate beneficial use and is bound by the original terms of the contract in terms of state law, the rules and regulations of the Board of Directors and the repayment contract between the District and US government. The District verifies the ownership and legal description of the water right to ensure compliance with accepted policies. The application is forwarded to the Board of Directors for approval. The transaction is recorded in the records of the county in which it took place.

### **2.2.3 Access to information**

The registration of leases and sales are centralised in the District Offices but they do not act as brokers.

Private brokers provide buying and selling information. Regional newspapers carry advertisements. Private contact can also result in a sale.

Information on the price of rights to use water is easily and cheaply available. A quarterly newsletter is published. In many ways provision of information about the availability of rights to the use of water for sale resembles the situation in the case of house and land markets.

Twice a year the District holds a one-day meeting for all water users. One before the water delivery season starts and one after the season has ended. At the first meeting the projections of available water are presented. Based on the comments from the meeting, the Board of Directors sets the water quota available for the season.

The fall meeting reviews the efficacy of the operation of the system over the past season.

### **2.2.4 Administering and enforcing**

The District has a sizeable permanent staff that includes a section that operates as a clearing house or dispatch centre that receives and processes water orders on a daily basis and where water deliveries are coordinated.

The District is also responsible for maintaining relations with local and regional agencies and various other administrative officials.

Private ditch companies are responsible for running collective irrigation systems i.e. managing the canal system for a group of water users. A large number of ditch companies function with the water users being shareholders in the ditch company. They are responsible for the distribution of water to their members as required by each user.

The Board of Directors is the governing body of the District. They have broad authority including the authority to levy assessments on property. The 12 board members are appointed by State District Court Judges for a period of 4 years. They are appointed based on geographic representation, proven expertise in water matters and the broad representation of the water user community.

#### **2.2.5 Applicability of the CBT procedures to the management of a country water management system**

*The purpose of the description above is to highlight the institutional elements that must be present for a market to function. The CBT scheme is very homogeneous in the sense that it involves a single project and does not have to deal with the variety of water sources, such as, amongst others rivers, storage dams and variability of water sources. In addition the third party effects that are present in transfers are minor because it basically deals only with the distribution of water among users by way of a canal system and water use entitlements cannot be sold to users outside the area.*

Protection of the interest of other water users and the water resource itself as well as the socio-economic implications of trade between users are minor factors. The water market can therefore operate with a minimum of outside regulation and at low cost.

Such ideal conditions for the operation of a water market can not easily be replicated in a country situation because of the diversity of water resources and water use and the existence of third party effects which necessitates a larger degree of regulation of trade than in the CBT example.

### **2.3. COUNTRY EXPERIENCE**

Institutions are often adapted to fit local requirements which are not necessary for such a market to operate but are due to the socio-economic context prevailing in a specific country or region of a country. Restrictions on water transfer to areas outside the catchment area and limits on the ownership of water entitlements are examples. The water markets of the countries included as case studies might not operate as smoothly as in the



CBT case. Each of the countries chosen, however, demonstrates specific circumstances that can be applied or alternatively avoided when a new system is designed. Formal water markets already function for some time in countries such as Chile, western USA and Australia and are discussed in the next paragraphs.

### 2.3.1 Western USA

Rights to the use of water are an important part of the legal system of the various states especially in the western parts of the USA. Since rights to the use of water are provided by State laws such rights also differ among the various States.

#### 2.3.1.1 Trade of the right to use water

In Colorado, Nevada and Utah rights to use water can be bought and sold separately from land. In other western states, such as Arizona, water is acquired as an appurtenance (appendix) to land and cannot be traded separately.

In Colorado, for instance, two types of rights to use water exist. Both are detached from the land and the owner can buy and sell and rent or let the right without being forced to change the ownership of the land.

The first kind is that described in case of the CBT scheme namely that downstream water users cannot obtain rights to the use of return flow water.

The second type of right to the use of water, under the Colorado Water Law, is also more common in the USA. A system of appropriative water rights is used (first-in-time and first-in-right). The senior water right holders have the first right to use before junior water right owners. This stipulation restricts the market for water use rights. Only consumptive use of water can be sold and only on condition that no harm is done to downstream users who have developed a prescriptive right to use return flows based on historic dependence and use.

The specification of water use rights on the basis of consumptive use limits the extent to which the rights of other users can be infringed on and therefor the possibility for litigation (Nieuwoudt, 2000).

A change in the quantity of water or type of use must be filed with the water court of the state and all other water users have the right to protect their interests in court. The result can be the payment of compensation to the downstream user or a decision by the court that

enough water must be released by the new upstream user to prevent damage to the downstream user. This can be a time consuming and expensive process with high transaction costs that might prevent the transfer from taking place.

Issues concerning applications to transfer water use rights are often of a technical nature and can be solved by water engineers. In the western States the findings of the State Engineer are usually accepted by the concerned parties and thus obviating the use of the slower and more expensive process followed by water courts (Nieuwoudt, 2000).

The trade of water use rights is influenced by many factors such as, amongst others, priority or assurance of the transacted right, geographic flexibility, changes in regional economies and environmental impact. For the trade to be legally valid some of the requirements are;

- a) water must be beneficially used and must continue to be beneficially used after the envisaged trade;
- b) such proposed trade must not affect other users and must be in the public interest; and
- c) in many jurisdictions inter basin transfers or transfer outside the area-of-origin that will result from the proposed trade can only take place after consideration of local interests.

There is an underlying notion that a market-oriented behaviour is incapable of solving conflicts in an equitable manner. Therefore oversight and regulatory approval for transfers of the rights to use water and markets are required. Because of these considerations water markets has been subjected to regulatory requirements in the interest of third parties. Such measures include; public notice of intent to transfer with the opportunity of filing protests; forfeiture of right if prior approval is not obtained; requirement that transfer does not injure other users from change in volumes, timing, storage, means of diversion, quality, deprivation of return flows, point of diversion or combinations of these influences and; compensation for loss and payment of expenses.

In addition the broader interest of the community must also be considered. The effects on economic activity, fish and game and public recreation, public health, opportunity cost of the use and the needs for water conservation are examples of such interests.

These measures to protect, what can be considered as a very inclusive view of third parties effects, tend to increase the transaction costs of trading in the rights to use water.

Water markets however do function notwithstanding these inhibiting factors.

#### 2.3.1.2 Markets in operation - permanent trade

It is difficult to generalise the efficacy of the functioning of water markets in the USA. It would appear however that the reliance on judicial procedures to protect the interests of third parties has been a serious impediment to trade. The degree to which water transactions are caught up in the judicial system varies as do the associated transaction costs. Estimates of transaction cost vary between 2 and 20 percent of the value of the water (Colby, 1990).

A case-by-case consideration for the approval to trade rights to the use of water is used in California (Rosegrant, 1995). Many beneficial arrangements were made in California through, amongst others, conservation investments which increased the efficiency of existing distribution systems, thus releasing water for other uses. Some of these arrangements, however, required up to 5 years of negotiations among participants and interested third parties. (Frederick, 2001)

#### 2.3.1.3 Markets in operation - temporary trade

More liberal trading policies are used in some states but mostly for temporary transfer. The nature of temporary transfers, in principle, reduces third party concern in the sense that the transfer will not permanently undermine the economic and social viability of the water exporting (or source) area.

Transfers among farmers within the same irrigation district are common and often easy to arrange. Temporary transfers to users outside the irrigation district to, for instance, municipalities face more obstacles and transaction cost.

Farmers with senior rights may profit from selling part of their rights for a limited period during droughts. One way of formalising such short-term transfers is via water banks. Such a bank came into operation in California during recent droughts. Idaho has a more permanent water bank program (Frederick, 2001). Such arrangements as well as other transfer rules have as their purpose the protection of third parties but at the same time aim to reduce policy induced transaction costs. In New Mexico transferable water quantities are determined using standard formulae together with historical and secondary data. In Wyoming the authorities approve the temporary transfer on the assumption that fifty percent of the

diverted water is consumptively used and is therefor available for trade.

### 2.3.2 Australia

In 1994 the Council of Australian Governments comprising the heads of the Commonwealth, State and Territory governments agreed to a commitment for a comprehensive and consistent reform of the Australian water industry. Reforms proposed relate to water pricing, water allocation (including allocations to the aquatic and riparian environment), trading in the use of water rights, institutional reforms, environmental and water quality, public consultation and education.

A major aspect of the reform requirements was the implementation of the principle of the trading of rights to use water which takes place within the framework of water allocation issues and processes.

Each state was left with the flexibility to implement the reforms in a manner suited to local conditions. All States and Territories have instituted actions with a view to implement the reform proposals into state legislation by 1999 and 2000.

#### 2.3.2.1 Institutional arrangements

The institutional issues as they occurred in Western Australia are discussed in detail. The situation in other states and territories may deviate in some aspects from this example (Banyard and Kwaymullina, 2000).

In line with modern thinking commercial entitlements to the use of water from natural systems is facilitated through licences that allow the use of surface water or groundwater. The water entitlement as defined in the licence becomes a negotiable asset that the holder can trade at his/her discretion provided that it does not cause environmental or other detrimental effects.

The licence itself can be transferred, the entitlement under the licence or part of the water entitlement under the licence can be transferred.

The permission to transfer the licence was intended to relate to temporary and permanent transfers. Due to capital gains tax concerns on the transfer of rights to use water, a leasing arrangement was introduced that allow another person to operate under the licence for a limited-period.

The Water Commission as the central state administrative body has the main regulatory functions. They will trade in licences themselves only as a practical measure or in cases where water is required for social purposes for example to maintain a recreational fishery.

During the water allocation planning process water is set aside for environmental purposes and cannot be transferred. The Commission also has the right to amend cancel or refuse to approve a transfer of a licence on environmental grounds.

There has been great concern over the possibility of speculation in water licences. The eligibility provision is designed to allow limits to be placed on speculation. To affect this a licence can only be transferred or leased to a person who is eligible to hold a licence which is carefully specified in the State Act (Banyard & Kwaymullina, 2000)

By-laws are intended to allow for more flexible management for specific areas in the state. This arrangement provides a way to expand the eligibility provision by increasing classes of people who can hold licences when and if desirable

A measure to prevent the hoarding of licences is the provision that the Commission can refuse to grant or transfer a licence if they are not satisfied that the applicant has the means to use the water allocation applied for.

The Commission must approve every transfer or agreement relating to a licence. Considerations are the same as for approving a grant and include;

- ecological sustainability
- environmental (which includes social, economic and political) acceptability
- other current and future needs for water
- detrimental effects on other people
- consistency with water management plans

Prior to the approval of the trade, the Commission can require that an assessment be made at the client's expense of the effects of the trade.

Local by-laws can require that affected people be notified of a proposed transfer and can object to the grant or application. After reviewing the objections the Commission can make a decision on the application. Objectors have no further review or right to appeal. The Commission can amend a licence as necessary or desirable to allow the transfer

In general the trading system adopted by Western Australia is restricted by broad social objectives of the community. Trading will be introduced in areas where there are adequate water available to satisfy the requirements of people wishing to use water and where the Commission is satisfied that there are adequate means in place to manage trading. Provision for such trading is then decentralised with the aid of local by-laws that regulate many of the detail operations. This arrangement has the advantage that it can be adjusted easily as experience is gained on the operation of water markets.

In addition area-by-area trading rules are developed in consultation with the Commission and the community. For example trading rules for the Carabooda sub-area (Banyard & Kwaymullina, 2000) specify that; every sale or lease shall be entirely contained in a single area and special emphasis is placed on restricting sleeper rights. In addition domestic entitlements cannot be sold or changed as a result of a re-evaluation of safe yield. A change in total resource allocation resulting from a re-evaluation of safe yield of the water resource, shall be made by a pro-rata change in the entitlement or another method specified in the allocation plan. The trading rules for the Carabooda area is presented in Appendix 1.

#### 2.3.2.2 Markets in operation

In Australia the water management system is a State issue. Water management at the operational level therefore differs between the various states. For instance the charges for irrigation water vary from 70 percent of cost in New South Wales (NSW) to 100 percent of cost in Victoria. Reliability in terms of reserves being kept for irrigation during droughts differs. Victoria keeps large reserves compared to NSW with small reserves.

All states have the requirement that the state authority must approve transfer transactions. They administer regulations designed to guard against detrimental third party effects of water trade. Some states have quantity limits placed on permanent trade while others have limits on trade between regions. Institutional arrangements also vary between states. In some states water markets for irrigation are open all season while in others it is only functioning at the beginning of the season.

Water use for hydro-electric power generation has been set by regulation partly aimed at protecting downstream users. As such rights to water use will be set by licences specifying the hydro-electric company's capacity to use, collect, divert, store and release water.

Historically the rights of the environment to water have been a residual after provision was made for commercial uses. Emphasis is now being placed on ways to define the environmental allocation of water. Provision for water for environmental purposes based on a licensing system is still an issue that is not fully resolved.

#### a) Return flows

Rights to the use of water are defined in terms of water diversion and not consumptive use, with the resulting third party effects if stream flows are altered due to uses upstream having negative effects downstream.

Such problems can be averted by defining water use rights as consumptive rights. At the practical level the enforcement of consumptive use can involve additional cost over diversion rights. It would require the metering of the water at the intake channel as well as the return flow in the drainage channel. It would double the amount of metering required to measure the abstraction. The measurement of drainage is also prone to errors due to the effects of rainfall and evaporation variations and seepage from elsewhere.

In practice the need for the double metering can be overcome by approximating the quantity of water consumptively used by making use of the assessment of experts on water use.

#### b) Sleeper rights

To the extent that sleeper rights were present in the past, the reform measures introduced in 1999/2000 intend to do away with such rights. This is clear from the prescription of who is eligible to hold a licence as well as from the example provided of the Carabooda area trading rules.

#### c) Market effectiveness

The operation of water markets in Australia is still evolving. For instance, the limited trading in South Australian markets resulted in significant market price dispersion, indicating that reliance on markets to reallocate water efficiently may have been overstated (Challen & Petch, 1997 and Brennan & Soccomoro, 1999). Such inefficiency costs and the potential errors in designing rights to the use of water that protect third parties are partly responsible for this scepticism.

In NSW trade is now a dominant means for reallocating water. Ten percent of the total entitlements for consumptive use are traded -

overwhelmingly through temporary transfers. There are however impediments to trade such as;

- cumbersome approval procedures; the time it takes to carry out a permanent trade varies between 6 and 12 months. A temporary trade takes up to 7 weeks to approve. There is a lack of prior approval mechanisms and present arrangements are cumbersome;
- permanent trade requires environmental approval while temporary use of water for up to 5 years do not require such approval. This led to temporary trade being dominant; and
- permanent trade was also hampered by the rapid evolution of water policy and concerns about the future security of the entitlements, causing owners to retain rights to the use of water where there is uncertainty about the future.

### 2.3.3 Chile

The present approach to water management commenced with the institution of the Water Code of 1981. This Code is credited with the introduction of a water market. In fact the Code does not make any specific reference to water markets itself but provides the framework within which water markets can operate (Schleyer & Rosegrant, 1996, Bauer, 1997 and 1998). The system that is used in Chile can be described as a deliberate market oriented approach which was designed to remedy the perceived weaknesses of water markets operating in the USA.

#### 2.3.3.1 Rights to the use of water

Individuals cannot own water and can only obtain private rights to use water. The owner of the right to use water is entitled to use the water, obtain benefits from and dispose of it. The right to the use of water is separate from ownership of land and as such can be mortgaged or traded.

##### a) Contracts

The rights to use water are specified as a proportional right and expressed in volumetric terms, as litres per second or cubic metre per year or month and are proportional if supply is insufficient.

The rights can be expressed in terms of consumptive or non-consumptive use. Non-consumptive rights (mainly to hydro-electric plants) allow the holder the right to use the water but requires that the user restore the water to a stipulated quality. Such rights do not imply any reduction in the quantity of water available for consumptive use



which may exist over the same water. The right to the use of water can also be specified as permanent or contingent, where a contingent right refers to a claim over the use of surplus water that are only occasionally available after permanent rights to use water have been satisfied. The right can also be continuous or only for a certain period of the year or can even alternate among several persons.

The right to the use of water is subject to the general provision which requires that water abstraction must be accomplished so as not to adversely affect the rights of third parties over the same water in terms of its quantity, quality and opportunity for use.

b) Return flows

Return flows may be used by the recipients without a need to establish the right of use. The use of this water is contingent upon the flow of the main waterway and the use is a contingent right for which, by definition, there is no obligation to supply. By ignoring third party rights to return flow, the Chilean law has greatly reduced the transaction cost of water trade which eases the functioning of a water market. Other third party effects that may result from the transfer of rights to use water, from natural waterways, are protected by the requirement that such transfers must be authorised by the Central Government Department namely the General Directorate of Water (DGA). In the case of artificial waterways authorisation must be obtained from the respective Water Users Association (WUA).

The authorisation to trade water will only be given in the absence of demonstrable third party effects. Persons or organisations with hydraulic infrastructure that are affected by the proposed transfer of the rights to use water to natural waterways may file a motion for denial to the WUA or DGA.

Authorisation is conditional on the assumption of responsibility and cost of constructing any works necessary to avoid effects on the rights or infrastructure belonging to third parties.

Where the transfer involves the movement from one artificial waterway, such as a canal, to another the government approval process takes approximately 2 years. This time delay tends to discourage interested parties from embarking on new projects.

The law provides for judiciary recourse for conflicts not solved by WUAs or DGA.

### c) Allocation of initial rights to the use of water

There are three ways of obtaining the initial rights to the use of water; by application on the basis of a prescription, by application or public bidding for new or surplus water or by the purchase of rights to the use of water in the market.

Grants by the state according to judiciary prescription has been the most significant because under previous governments most rights came into state ownership. When privatisation began the water use was frozen at the 1975 levels to establish a base for the assignment of new rights to the use of water. Most water users had a good base on which they could substantiate their applications. The process of obtaining rights to the use of water by prescription was completed in 1979. Since then, obtaining rights by market transactions are the second most common. Grants of surplus water have been small because of the lack of unused water or water becoming available from new water resource development infrastructure

Ownership of rights is recorded in the Water Registry of the Property Registration Authority.

The acquisition of the initial rights was free but rights are encumbered by liens in order to guarantee the payment of fees owed for the use or acquisition of irrigation works or administration, distribution, maintenance and water distribution costs of the water users associations. These liens have priority over others, giving the WUAs the ability to withhold water in the event of non-payment. Water may also be withheld if members abstract more than the allotted water.

#### 2.3.3.2 Administrative system

At the macro level various government water authorities are responsible for water development planning and oversight over natural inland waterways, entitling original rights, keeping the National Official Water Record, planning infrastructure and fixing maximum rates of water supply to urban water and sewerage companies.

All major infrastructure construction needs the authorisation of the DGA in order to prevent harmful third party effects or environmental damage.

State funding for projects requires an economic evaluation and active participation of the potential users of the project.

A third of the potential beneficiaries must approve a new water project or an improvement to an existing water project in writing. The construction phase requires at least half of the beneficiaries to commit themselves to finance the project. The facilities are then transferred to the various local bodies (WUAs).

WUAs are described as private sector organisations that enforce rights to the use of water and self-regulate of water users. Specific functions include to; distribute water, build, administer, preserve and improve infrastructure; collect fees for administration, distribution, maintenance and amortisation of constructed or acquired infrastructure, maintenance and management of infrastructure; and solve conflicts among members according to the law.

A hierarchy of local bodies exist with a water community being the lowest level followed by canal users organisation and at the highest level a "junta de vigilancia". The water community is usually in charge of the secondary infrastructure used by neighbouring farmers. A canal users organisation is in charge of larger infrastructure. A farmer may belong to both. The former might typically govern the secondary canal and the latter the main canal.

Natural source users (waterway) must organise a control committee (junta de vigilancia). Both the water community as well as the canal users organisation may be members of the junta vigilancia. The junta vigilancia may include individuals, public entities, public utility companies, hydro-electric enterprises or other users that have rights to the use of a natural resource (waterway).

They are the largest water user's organisation in Chile, made up of different canal associations that take water from the same river (a federation of individual canal organisations covering all or part of a river basin). Their main function is to enforce the distribution of water according to the rights to use water from the different canals.

#### 2.3.3.3 Challenges faced by the Chilean model

Some of the issues discussed in this section are only incidental to the operation of a water market but they illustrate the fact that a water market functions within the dictates forced on it by the socio-economic circumstances in which it operates. The overall thrust of the Water Code was the outcome of a compromise between the water market supporters and the more conservative opponents.

The opponents to the market approach agreed to the new dispensation because it strengthened private property rights and not because they had an affinity for market economics. They did not necessarily think

of water as an economic good where the rights to its use is separated from ownership of the land. In fact they were opposed to a tax on the right to use water that would improve its allocation efficiency. The conservative view and its overwhelming support for private property was a reaction against the previous socialist regime where private property was nationalised.

The outcome of the debate was however that the pro-market camp got most of what they wanted (Bauer, 1997) namely; a permissive legal framework that allows for private market transactions; and reduced control by the State.

#### a) Tension between central and local administration

The Central Body (in this case DGA) has little authority over private water use except during official drought emergencies. Most water management decisions are made by private individuals or canal organisations. The DGA cannot cancel nor restrict rights to the use of water once granted or recognised except by expropriating such rights and paying for such expropriated rights.

Ordinary courts have the adjudicatory powers over water use conflicts that were previously exercised by the DGA. The role of the DGA has been diluted and shifted to technical and administrative functions such as; gathering and maintaining hydrological data; inspecting larger water works such as dams and canals; enforcing rules governing private WUAs; keeping official registers of rights to the use of water and water users organisations; preparing studies, plans and policy recommendations which have regulatory power only after other branches of the government approve them.

The DGA therefore has little operational power or responsibility in regulating water use.

The Code grants autonomy in routine administrative matters to the various kinds of private WUAs. All of them are primarily designed to deal with irrigation issues. Coordinating relations among agriculture, industrial, hydro-electric, domestic and other water users depends "on the Code's general logic rather than specific provisions" (Bauer 1998).

Coordination depends on voluntary bargaining and negotiation among private holders of the right to use water and their representatives. Because the DGA has little power to intervene if parties clash, conflicts often go to court for resolution.

The lower courts, dealing mainly with disputes within the agricultural sector, function satisfactorily. The same can be said in the case of the higher courts when they have to deal with routine matters.

The difficult matters of river basin conflicts are more problematic because the courts have limited guidelines contained in the Water Code. A case in point is the relation between consumptive, mainly irrigation, and non- consumptive, mainly hydro-electric, use of water. It is not clear which use has preference. The Code specifies that rules governing such relations must be determined individually for each right to use water when granted or acquired. One does have sympathy with this approach as each case has its own factors to consider. What is lacking is perhaps a prescription of all the factors that must be considered. The importance of each will vary from case to case and also over time.

The rules of decision making in the vigilance committees are biased in favour of non-consumptive users.

There is frequent conflict between the agriculture and hydro-electric sectors. The irrigation farmers regard the river as their domain while the power utilities, who have built and paid for dams and reservoirs, take it for granted that they can manage the water in the dams as they please and that their use is non-consumptive as long as they return the same quantity and quality of water to the system. The conflicts are largely based on the following issues:

- Water is required to be stored by the power utilities during times of the year when it is required for direct irrigation or to be put into storage dams by the irrigation farmers, also for later use;
- Water that is used by upstream irrigation farmers is not available for use by downstream power utilities;
- Water is released from storage by the power utilities at times when it cannot be used by downstream farmers, either for direct irrigation or for storage in dams; and
- Water used by the power utilities is only non-consumptive if it is released into the river at times and in quantities that will not diminish that portion of the earlier flow regime that could be used by the downstream farmers.

The Chilean experience shows that a laissez faire approach that relies mainly on private bargaining between water users is not sufficient and in some cases can make problems worse. Because private rights to the use of water are so strong relative to the state water agency's regulatory authority, the bigger more powerful water users have little incentive to negotiate.

Electricity generating companies have little to fear from the DGA or smaller users. This situation together with the fact that WUAs are often unable to resolve disputes means that many disputes end up in court repeatedly

#### b) Attempted reforms

Proposed reforms were mainly originating from the perception that the privatising zeal went too far. Proposals to address some of these issues were sent to Parliament in 1992.

Three issues were singled out for reform namely;

- Speculation in and lack of use of allocated water rights. It was proposed that if a right to use water or part of it is not used after 5 years, the holder must lose that right. It was argued that this recommendation cannot be considered as a violation of the holder's property rights
- Tighten regulations, including creating new basin associations to coordinate multiple water user sectors or extend to the role of WUAs to coordinate users in a sector or part of a sector.
- Giving more authority to the DGA in conflicts relating to water pollution and third party effects.

The proposals were opposed mainly based on the fear that property rights will be compromised and also an unwillingness to give public agencies more power over water users' rights and consequently the proposals were withdrawn.

#### 2.3.3.4 Trade in the right to use water in practice

Trade in the rights to use water does not take place as frequently as was expected (see amongst others Bauer, 1998). A number of reasons why the trade in water use rights face implementation challenges are listed separately below since it can be of relevance in other countries who want to introduce water markets.

- a) Most transactions take place between water users within the agricultural sector. The market works fairly well in agricultural sector where short-term rental of water among neighbouring farms was always a general occurrence.
- b) Transactions of use between different sectors are rare. No priority is specified in the Code or regulations and creates tension especially in the case of non-consumptive uses where hydro-electric companies and irrigation users must share the same source. The clash has its origins not because of water quantities used but because of differing seasonal patterns of

use. The conflict will persist as long as the hydro-electric plants do not accept the fact that by changing the flow regime water that was previously usable by farmers without storage will be affected.

- c) River basin management is under emphasised.
- e) Role of state/central control body (DGA) is limited. The role of WUA may be too strong since water allocation decisions are therefore almost completely in the local sector.
- f) Water transactions are restricted due to lack of infrastructure and the geography which makes the development of infrastructure very costly.
- g) Legal and administrative matters caused by uncertainty about many of the entitlements. Procedures are however in place to regularise this over time.
- h) Uncoordinated system of record keeping that results in a lack of information on the owners rights to the use of water.
- i) The Code requires that third parties be protected from harm. Holders of the right to use water that are affected by someone else's change in use or transfer can protest at the canal association level or in civil courts. There is however not a single agency that reviews all transfers. The DGA must approve changes in the relocation where water is diverted from a natural stream but has no authority to intervene in or settle conflicts. Such powers belong to the courts. This process tends to be slow and erratic. Even a streamlined system relying on legal authority and technical expertise is dependent on the existence of the necessary expertise which often is not available.
- j) Faced with such obstacles and high transaction costs, markets will only function once the prices of rights to the use of water are fairly high.
- k) Hoarding of rights to the use of water and speculation cause problems since at present right holders pay no taxes or fees for acquiring rights from the state or on the unused rights. They have no obligation to use their rights and face no penalty or risk of cancellation for lack of use.
- l) Water is not yet as scarce as popularly thought. There are still some cheaper alternatives in agriculture to buying existing rights to use water. Increases in the efficiency of use and pumping groundwater by applications for new rights to use groundwater still provide room for access to water without going to the market. Users can store water obtained from rivers from contingent rights since surplus water occurs in periods when the ratio of the demand to the supply is at the lowest and water can be stored in storage dams on farms to be used in the growing season.
- m) The culture of considering water as an economic good is not yet well established.

#### 2.3.4 Developing countries

The cases that have been discussed above can be classified as formal water markets that occur mainly in developed countries that have the necessary infrastructure. Informal markets are more likely to occur in developing countries where the institutional infrastructure for the trading in the rights to the use of water is not in place.

In their cross-country study of the water sector and institutional changes demanded by the need for making the water sector more efficient, some developing countries are included (Saleth & Dinar, 1999). Among this group are Morocco, Sri Lanka, China and India. Not one of these countries have an integrated national approach towards developing a water sector that can incorporate the changing water management paradigm as discussed in the introduction. Various initiatives are followed to affect water allocation but based on the information contained in this study the countries listed are far from a situation where the prerequisites for a functioning formal market in the trade of the entitlements to use water can operate on a country-wide basis. (Perry et al, 1997).

These prerequisites have been discussed in previous sections but can perhaps be restated in the present context. The requirements are; laws assigning rights, laws describing how rights may be traded, legal systems that enforce the rights and punish infringements on those rights, farmers who are accustomed to working with laws and rules that are enforced, a physical irrigation infrastructure and an irrigation management system capable of allocating water in accordance with market friendly principles and the changing needs and priorities that flow from these principles.

The absence of these basic prerequisites, which is the norm in developing countries, led to the opinion that the various variants of privatisation are likely to do more harm than good (Perry et al, 1997). One could differ from this assessment, but it is clear that in such a case a formal market in tradeable rights to the use of water cannot function. Informal markets which do not need a sophisticated infrastructure can however function quite effectively.

There are many examples of informal water markets functioning at the local level in developing countries. One such example of a water market is in North Bihar (Shah & Bullabh, 1997) where groundwater is bought and sold. Such markets represent an informal arrangement through which owners of wells and pump sets sell irrigation services to other farmers in the vicinity. There is no interference by authorities in these markets. These markets came about because there are farmers who own or can lease some land but do not have access to a well or a pump. An additional factor is that their lands are so fragmented that even large farmers cannot invest in a well and pump set on each parcel of their land. The study concentrates on broad issue of whether the market functions to the common good or whether there are



aspects of rent seeking by the presumably more powerful larger landowners who can afford the infrastructure. It was found that the market was a quite active economic institution suffering little interference or manipulation from buyers or sellers or caste. The existence of elements of monopoly pricing could however not be disproved. The number of transactions did tend to vary among the districts studied.

Other examples of water markets are those occurring in Egypt and the "warabandi" system of irrigation in India and Pakistan. These cases all fall in the category of the example discussed. They are characterised by the fact that they operate on a relatively small scale, at the local level with little official involvement.

Since the emphasis in this study is on formal water markets where the trade in the rights to the use of water, informal water markets as they occur in developing and developed countries are not discussed any further.

## **2.4. LESSONS FROM INTERNATIONAL EXPERIENCE FOR FACILITATING A WATER MARKET IN SOUTH AFRICA**

Although the experience of each country regarding the trade in water rights is different, a few common themes do appear that can be useful in the South African context.

### **2.4.1 Well-defined property rights**

It is a recognised principle that water cannot be owned by individual users. Users can only acquire the right to use water. Such rights should not be tied to land ownership. Rights to the use of water are therefore transferable without affecting the ownership of the land itself.

It has been repeatedly stressed that the trade in water rights requires a clear definition of the property rights to the use of water. In this regard, amongst others, the following aspects need to be addressed:

#### **2.4.1.1 Volume**

The right must clearly indicate how much water is made available and over what period(s).

The right can be specified in volumetric terms when there is sufficient water not to curtail the use and the proportion during curtailments or as a proportion of the normal capacity of the supply source, after having quantified and defined the normal capacity, and again also the proportion when the normal capacity is not available.

#### 2.4.1.2 Reliability

Because of the variable nature of water supplies, an entitlement to the use of water can seldom be expressed in terms of a 100 percent reliability criterion. As the supply capability or yield of a water source is usually described in terms of a quantity at a particular assurance level there will inevitably be times when water supply will be below or above this yield. In times when the yield cannot be maintained some kind of rationing will be needed. This should include a specification of a priority of use such as happens in the case of the apportionment system used in the western USA and elsewhere. A sort of first-in-time and first-in-line provision of water is provided for. Only when the senior rights are satisfied can junior rights holders be accommodated. As an alternative a proportionality criterion can be used where rights are specified as a proportion of the total quantity of water normally available. The proportionality rule is the most common in water markets. It has been said that the apportionment rule complicates the functioning of markets. The relative merits of the one system above the other has more than one facet but evaluated purely on the basis of the ease of the functioning of a market, the proportionality criterion appears preferable. In the South African case where droughts are a common occurrence the prior appropriation criterion can have advantages. For a comparison of the merits and demerits of the two systems see (Howe et al, 1986). This is borne out by the experience in Chile, Australia and the CBT project.

#### 2.4.1.3 Trade

The issue of the trade of entitlements to the use of water is central to the operation of water markets and is referred to throughout this discussion. In all the country cases discussed, rights to the use of water are transferable via water markets. The rules under which trade may take place differ and rules are introduced as a result of the interrelationship of water use between sectors and different users in the same sector mainly to protect third parties influenced by such transfers. The completion of transactions are therefore delayed for example for up to two years in the case of Chile, up to five years in western USA and up to twelve months in NSW.

The issue is therefore not the transferability itself but clear purposeful rules that can as far as possible be overseen by efficient and effective administrative procedures with the courts only coming in as a last resort to settle disputes.

It would appear from the examples discussed as if intra-sectoral, temporary transfers particularly in the agricultural sector are the least complicated and therefore the most common. This is followed by permanent intra-sectoral irrigation transfers. In terms of complexity, inter-sectoral temporary and long-term transfers within the same catchment area are next in line, followed by inter basin transfers as the most complex.

The reason for the increase in complexity of the various kinds of transfers mentioned above can also be related to the influence of such transfers on the return flow and thus increased third party effects.

Also the reason why temporary transfers, particularly in the agricultural sector are the most common are because less administrative effort, such as the registration of permanent deeds (which is a time consuming and complicated process) is required. Intra-sectoral transfers, for example in the agricultural sector, also have less problems in regard to the assurance of water delivery. Water for domestic requirements needs a higher level of assurance in comparison with agriculture.

It is important to note that certain sectors, such as the agricultural sector has a high return flow factor on which other users are dependent. If water is diverted away from the agricultural sector to industry, which has less return flow, severe third party effects could result.

As one moves up the hierarchy of complexity the functioning of water markets will become more cumbersome because of the likelihood that third party effects will become more intractable and longer administrative procedures since a larger number of bodies are involved. The difficulty of trading water use entitlements also increases as water becomes scarcer because the likelihood for negative third party effects increase with water scarcity.

#### 2.4.1.4 Quality

With regard to institutional issues, water quality is seldom mentioned. Water quality is however, an important dimension that affects its uses (Nieuwoudt, 2000). Water quality for environmental purposes is very prominent in Australia in the sense that in the past water allocated for this purpose was not sufficient. It would appear that the release of polluted water in waterways would have considerable third party effects. Property rights should therefore provide for specifications as to the quality of water returned to waterways to qualify as non-consumptive use and to prevent pollution of the water resource and the attendant third party effects. In the case of hydro-

electric power generation and other non-consumptive uses, including return flows from irrigation the quality of the water should include the flow regime so that it qualifies as a non-consumptive use available for other users.

#### 2.4.1.5 Security of rights/stability of rights to the use of water

As discussed in paragraph 2 above secure ownership is an incentive for sound resource utilisation and the state should therefore protect property and enforce such contracts. As in the case of Chile, the right to private property is of great concern in debates on changing water policy and lies at the heart of the resistance against giving more regulatory authority to state agencies. Permanent and constitutionally protected rights will be preferable. It would appear that in the case of NSW frequent water policy changes create uncertainty regarding rights to the use of water and a resulting reluctance to trade.

Permanent rights for shorter periods or rights that are periodically renewed can also create uncertainty. In Mexico and in Victoria shorter terms are specified. No reference could be found as to whether this factor affects the trading in rights to the use of water. Such an arrangement does provide for flexibility should conditions that need reallocation occur. Such a motivation, however, amounts to a distrust in the ability of markets to affect such adjustments or reallocation. The distrust or uncertainty can be reduced if there is a provision for compensation or if the time limits are removed or are sufficiently long.

In Mexico, the Central Water Commission gives concessions to water users for a period that varies from 5 to 50 years with most varying from 30 to 50 years (Easter & Hearne, 1995). These concessions will generally be renewed if the use and effluent discharge have not changed. The Commission has to approve renewals.

This is however, a very complex problem because water use is seldom restricted exclusively to the benefit of or cost to the user. Often the influence of a change in water use influences parties other than the transactors. Specific effects cannot be foreseen or defined in the property rights contract. There will therefore always be a degree of fuzziness in defining property rights, implying a need for conflict resolution and coordination in case of possible disputes. As far as possible however clarity must be obtained as to precisely what is meant by well-defined property rights.

#### 2.4.2 Initial allocation procedures

In most countries where water markets are introduced, the initial allocation of rights to the use of water is based on an administrative allocation procedure. The procedure is perhaps the easiest in the case of allocations from a new resource of supply that is supplementary to existing water allocations as was the case for the CBT project. Allocation procedures for existing schemes where there is a change from an administrative allocation procedure to some form of a licensing system is time consuming and complicated.

It is at this stage that the possibility of conflict cannot be ruled out. Clear procedures need to be agreed on beforehand.

The allocation of such rights to the use of water is usually free of charge. In the case of the CBT as well as Chile this was the case. Because the initial provision of such rights is free, various measures to limit the potential exploitation of the process are introduced. In the case of CBT and in fact in most of the western States of the USA that function under a system of rights to use water separate from land rights the initial allocation process was carefully managed. Although applications were based on historical use each applicant had to demonstrate that the water applied for could be used beneficially. The application of each applicant was verified by an official on-site visit. Care was taken not to allocate rights to the use of water that could not be beneficially used. This was done to avoid the initial hoarding of rights that could be sold at a later stage when markets become more favourable.

In Chile the initial allocation was based on historical use - the beneficial use provision was not strictly enforced resulting in the hoarding of rights in some cases - the so-called sleeper rights. A similar situation arose in Australia where sleeper rights are also prevalent under previous regulations. Officials and politicians are very sensitive about the existence of sleeper rights or the hoarding of such rights because they create an opportunity to profit from a public resource. Attempts at introducing use-it or lose-it provisions have been strongly opposed especially in Chile. One would assume that on the basis of amongst others the historical right to the use of water acquired by users the potential of use-it or lose-it provisions would infringe on their property rights as protected by the constitution. Sleeper rights have a negative effect on water markets.

In cases where there is a surplus supply of water in a catchment area the allocation of rights to the use of water based on historical use may cause fewer problems from a conflict point of view. Existing users and previously ill defined uses such as environmental provisions and other minimum use specifications can be accommodated. Procedures for allocating the remaining surplus supplies can then be developed.

Such processes can range from the outright allocation of rights to the use of water to previously disadvantaged persons as well as in addition some agreed on procedure for auctioning the surplus water (Simon, 1998).

The problem might not be as smooth in the case of catchment areas where there is a deficit. It is expected that this would be the case in most river basins/catchment areas in South Africa. In the case of the Murray-Darling Basin a voluntary across the board proportional reduction of 10 percent of water use entitlements was introduced.

Similarly in the Australian situation, environmental concerns are becoming more and more of a concern. Previously water available for environmental/recreational purposes was of a residual nature. The need for a more secure right to environmental water is therefore a concern, especially if a river basin is already over-extended.

#### **2.4.3 Dealing with third party effects**

Because of the possible interconnectedness of water use, third party effects are bound to occur. It is on this issue where most of the obstacles to markets occur since markets require low transaction costs and depending on the nature of the use of the product in question a fairly quick resolution of dispute. Third party effects must therefore be dealt with in an efficient way.

One way of dealing with the issue is by the temporary transfer of rights to the use of water. In such cases the third party effects tend to be less restrictive because third party effects over the shorter period is more contained and less likely to cause the lodging of objections.

One of the factors limiting transfers of rights to the use of water is dealing with rights to return flows. This can give rise to endless conflict. Since rights in western USA are specified on the basis of net consumptive use, explicit rights to return flows have been created. Any change in return flow due to a change in use patterns elsewhere (usually upstream) affects return flow uses. This has complicated the transfer of water rights considerably in these states.

The CBT project averted this problem by specifying that there will be no right to the use of return flows downstream. Such water can be used but the user cannot obtain a right to its use. Similarly in the case of Chile, rights for the use of return flow are not given. Only contingency rights to such water are possible. A similar type of situation is prevalent in Australia.

Dealing with this issue in such a pragmatic way limits the third party effects originating from this source.

Not all third party effects are of this nature and procedures must be established to deal with it satisfactorily and if possible quickly. A detailed administrative procedure needs to be worked out to specify the role of the various state agencies and the courts in conflict resolution including specifications of the responsibility for the cost involved, etc.

It would appear as if Chile provides an example of what not to do namely, fragmented procedures, limiting the role of state agencies and relying very strongly on the courts to resolve such issues.

The situation in the western USA is difficult to generalise. There is the requirement that no injury should be caused to a third party as a result of a transfer. In an effort to limit such injury many restricting measures are developed that can result in the process of permanent transfers becoming very costly and time consuming. In many cases the issues are, however, more technical in nature and can be dealt with satisfactorily by the State Engineer thereby speeding up the transfer process.

Regulations designed to protect third parties such as those cited above tend to interfere with the functioning of the water markets. Care should be taken that rules and regulations are not over zealous.

#### **2.4.4 Administration**

There would be general agreement on the statement that water markets functions best where restrictions are reduced to the essential. This view must be seen in the context of the Chilean experience. In Chile and countries imitating Chile, such as Peru, the role of water administration and planning agencies in assessing public interest elements, when dealing with water transfers, have been severely limited. The assumption is that market forces will deal with externalities and issues of public interest better than government organisations whose role should be as limited as possible. The system was developed to counter the presumed flaws in the American system. It would however appear as if this approach may affect the performance of markets negatively. It would appear as if the ability of markets to solve conflict is limited. Conflicts are drawn out affairs and are seldom adjudicated on the basis of considerations other than that dictated by market rules. (FAO Legislative Study, Issues in water law reform, 1997).

The inability of the market to function smoothly appears to be particularly so when dealing with multiple user sectors and users, large scale economic issues, basin management and inter basin transfers.

As indicated in the introduction, the tendency worldwide is to move away from a centralised administration and regulation based management system to a decentralised system where economic instruments and local user participation is utilised.

In most countries reviewed the national body was involved in the initial allocation of rights to the use of water. They are also responsible for macro planning, policy making and coordination functions. A cautionary note on this aspect is needed namely not to completely isolate this body from operational matters, especially concerning conflict resolution. The case of Chile illustrates that the national body can also play a significant role in this regard.

In most countries, Australia, Chile and to some extent the western USA such a body must approve permanent transfer of rights to the use of water. Complaints about the efficacy of such procedures requires a careful review of procedures.

At the local level WUAs play a dominant operational role. It is at this level where especially the intra-sector trade in irrigation water takes place.

In this regard WUAs will have the broad functions regarding the facilitation of the market that was spelt out in the case of the CBT project. Other examples are provided by the rules of the Carabooda-sub-area in Western Australia (See Appendix 1).

Each local/regional water authority will have to draw up its own set of operational rules subject to the approval of the central authority to ensure adherence to common principles but need not necessarily be uniform. Conditions will vary considerably at the local level. One outcome of the unique local conditions will be reflected in the price of water rights varying according to local factors.

Between the central and local level there is room for bodies with specialised functions. There is a need for some coordination body at catchment area or basin level to deal with water issues at catchment level. It would appear that such bodies can also deal with inter sectoral water issues affecting inter alia, bulk distributors of water for domestic and commercial purposes.

Regional governmental jurisdictions and catchment areas do not necessarily coincide and it would appear as if water bodies at this level (such as for instance provinces) can be unnecessary.

Inter-basin issues can perhaps be dealt with by sub-bodies of the national water body.

In all the cases discussed, courts play a significant role in conflict resolution.

It is especially with regard to these issues that local conditions need to be taken into account and additional bodies may have to be created. Further discussion on these matters is deferred to a later section when the South



African requirements and provisions already made according to the NWA will be discussed.

#### **2.4.5 Availability of and access to information**

Markets cannot function without information being freely available. A register of owners of the rights to use water and transfers in rights will be a prerequisite. In most cases this is a national function with local bodies playing an important part in providing information.

#### **2.4.6 Frequency of trading**

Markets work fairly well in the intra-irrigation situation where short-term transfers between farmers are general. In the South African situation such transfers are frequent in the lower Orange River while it did not occur in uMhlatuze River (Armitrage et al, 1999). Other short-term transfers between sectors and users are also reasonably common because third party effects are less severe.

Permanent transfers are hampered by many regulations such as is the case in the western USA or in Chile where dispute resolution methods are time consuming. In the case of Australia the permanent trade of water use is relatively small in most states.

In cases where markets are not active, the prices that are realised may not reflect the true scarcity value of water and thereby limiting some of the efficiency benefits associated with water markets.

The challenge is therefore to provide the environment for the water market to be as active as possible.

### **2.5. CONCLUSION**

Based on the discussion above it would appear as if markets are functioning with varying degrees of success in the countries discussed. The approach taken by Chile to rely as far as possible on free market principles that restricted the role of especially the central administrative system and relying on courts to resolve disputes has not been without it's deficiencies. Because of the inter-relatedness of water use it would appear as if there is a need for regulation to protect the rights of third parties. The way in which this is dealt with and the efficiency with which such issues are dealt with from an administrative point of view will determine the success of a market approach to water allocation.

## **CHAPTER 3:        *TRADE IN WATER USE ENTITLEMENTS IN TERMS OF THE NATIONAL WATER ACT***

### **3.1.    INTRODUCTION**

In the previous chapter the institutional details needed to facilitate the operation of a market in the tradable rights to the use of water have been discussed against the background of international experience. These requirements must be seen in relation to where South Africa is at present regarding the movement towards the implementation of the NWA.

It would appear that, in the South African case, provision has been made in the NWA to fulfil all the basic requirements for a market in tradable rights to the use of water to operate.

The various relevant clauses contained in the NWA are enabling in nature. The real challenge lies in the next phase namely that of implementation.

There are a number of steps that must be followed before all the requirements will be in place. The authorities have already made considerable progress towards the new dispensation but the task to get all the building blocks in place for the country as a whole is enormous. The processes are time consuming due to, amongst others, the fact that each step requires a long and involved consultative procedure. Time can perhaps be gained if priority is given to catchment areas or sub-regions where the efficiency gains are the largest.

This study is limited to the transfer in the rights to the use of water that is only one amongst a complex set of activities related to the governing of the country's water resources. This chapter will concentrate on the provisions of the NWA that allow for a market in tradable water use entitlements to function.

### **3.2.    THE GENERAL PROVISIONS CONTAINED IN THE NWA WHICH WILL FACILITATE THE TRADE IN THE RIGHTS TO THE USE OF WATER**

The discussion in this section relies on the research commissioned for this study (Thompson, 2002). It is a summary of the aspects that relate to the facilitatory role that the NWA provides for the operation of a water market. The full report is presented as Appendix 2.

### 3.2.1 The approach followed in the NWA

This section contains an overview of a number of general principles that can be derived from the NWA that will facilitate the operation of a market in water use entitlements. A more focussed discussion of the specific sections of the NWA that is considered of more direct relevance are referred to in paragraph 3.2.2 below.

#### 3.2.1.1 The characteristics of water

Natural and running water belongs to no one in particular but to all. Those in need thereof may obtain a right to use it, a so-called "entitlement". The State has the responsibility to allocate and regulate these entitlements in the public interest.

#### 3.2.1.2 Trading of water use entitlements

The new framework provides for the trading of water use entitlements. Once the infrastructure requirements are in place it is foreseen that the trade in the entitlements will occur subject to varying degrees of control. This will depend on whether the trade is within a single user sector, between different water users sectors or whether it is between water management areas. The envisaged controls must ensure, amongst others, that the objectives of equity and fair water resource allocation are served by such intended transfers. The entitlement is severed from land and is allocated to a specific person. The NWA allows that the entitlement could be transferred from one person to another. A legal framework is in place to determine the potential harm of such a proposed transfer to third parties and the environment. The necessary procedures are provided so that such effects can be minimised.

#### 3.2.1.3 Best possible use of water

The riparian principle does not apply anymore. This principle is replaced by the framework that will allocate water to achieve the "best possible use". More than the productive use of water is involved for it is necessary to weigh up social, economic and environmental objectives to achieve equity, efficiency and sustainability in the use of water. Preference will be given to basic human needs, the protection of ecosystems and international obligations.

#### 3.2.1.4 Period of water allocation

Water authorisations will no longer be permanent. It will be granted for a five year cycle with a maximum duration of 40 years. The allocations can be granted on either the proportional or priority principles or both. An allocation remains in force until the end of the period, when it expires. The allocation can be suspended or withdrawn if there is non-compliance with the conditions of the authorisation. Allocations will be granted subject to a number of conditions guided by the criteria developed to determine the "best possible use" of water.

#### 3.2.1.5 Licensing

All significant water uses will eventually be licensed. In the interim water uses will be allowed to take place under a system of general authorisation. A process to register uses will be started by inviting applications for licences to the use of water. These applications will be evaluated in terms of the overall guideline stated in 3.2.3. The invitation to apply for licences will be done in sequence of priority areas. Areas under water stress will generally be considered first.

#### 3.2.1.6 Interim authorisation

Water uses which actually took place when the NWA came into operation can be continued provided that it was lawful when it took place. These uses will eventually be converted to licences as part of the process of inviting applications for licences, provided that the uses are beneficial and in the public interest. Persons who were entitled to use water under the previous legislation but who did not exercise these entitlements, may not start to exercise or trade these entitlements. Such entitlements are not acknowledged in the new framework. If a person, falling in this category, wants to use water, an entitlement must be obtained just like any other newcomer, either by way of general authorisation or a licence.

When an existing lawful water use is traded, a licence replaces the existing lawful water use. The existing lawful water use then loses the benefits it had (for example the right to claim compensation) when the compulsory licensing procedure is applied.

A right to use water is a property right or right in property as contemplated in Section 25 of the Constitution (Thompson, 2002). A person may only, in terms of Section 25 of the Constitution, be deprived of property in terms of the law of general application and no law may permit the arbitrary deprivation of property. Property may be expropriated only in terms of the law of general application for a public purpose or in the public interest and subject to payment of compensation. The amount, time and manner of compensation payment should be agreed to by the affected parties or approved by a court.

For clarity purposes the difference between expropriation and deprivation should be explained. Expropriation occurs when the state takes away (a right in) property and either keeps it for itself or transfers it to someone else. Deprivation occurs where the State leaves property in private hands but imposes restrictions on the use of the property. It is therefore merely the limitation of the extent of use of the property and does not require compensation even if the deprivation results in economic loss for the owner of the property. It is permissible provided that it is not arbitrary and is carried out in terms of a law of general application.

The Constitutional protection of property does however not impede the State to effect water related reforms by taking legislative and other measures in order to achieve socio-economic equity. If the effect of implementing the new water policy to achieve the "best possible use" results (by regulation or reduction of water rights) in existing use of water being relocated then no compensation is payable for that, provided that such deprivation is not arbitrary.

The provisions of the NWA are regulatory in nature and while some of these provisions clearly provides for the deprivation and a reduction of rights such as for instance for the Reserve. Provisions fall short of an expropriation of the rights and therefore do not create an obligation on the State to compensate for them.

A taking away of rights without compensation for the purposes of redressing past racial discrimination is not permitted unless it is reasonable and justifiable (Thompson, 2002).

Other related provisions that, inter alia, allows for the protection of water rights in terms of the Constitution appear in Section 32 specifying that everyone has the right of access to:

- any information held by the State; and

- any information held by another person and that is required for the exercise or protection of any rights.

To give effect to these rights the Promotion of Access to Information Act 2 of 2000 was enacted.

Section 33 of the Constitution provides for the right to administrative action that is lawful, reasonable and procedurally fair. Anyone whose rights have been adversely affected by an administrative action has the right to be given written reasons. Legislation must;

- provide for the review of administrative action by a court or, where appropriate, an independent and impartial tribunal;
- impose a duty on the State to give effect to the rights; and
- promote an efficient administration.

The Promotion of Administrative Justice Act 3 of 2000 gives effect to these rights.

#### 3.2.1.8 *Security of the attributes of water rights*

It is argued that water rights are probably not fully secure in their attributes due to, for example;

- the establishment of existing lawful use was problematic under the previous framework and it can be assumed that such complications will persist under the new dispensation. It is uncertain as to how and when these uses will be converted to licences;
- as far as rights are permitted in terms of a general authorisation, these rights are probably made;
  - \* without considering the actual water available in a specific resource; and
  - \* whether it is the "best possible use", and may be revoked at any time.
- as far as rights in terms of licences are concerned, these are reviewed at least every 5 years and are for a period not longer than forty years.

When all significant water uses are eventually licensed, these entitlements could become more secure in their fundamental attributes depending on how the policy is implemented. Water entitlements could become more definable in terms of units of measurement, reliability and priority of the entitlement (Thompson, 2002).

#### 3.2.1.9 Decentralisation

Provision is made for the decentralisation of various functions to CMAs and WUAs

#### 3.2.1.10 Water obtained from a canal

There is one issue that needs further clarification. It is related to one aspect of the definition of water use contained in the NWA.

In terms of the NWA Section 21 water use is defined as taking water from a water resource. A canal which is used to supply water to a user is not a water resource. The taking of the water from a water resource by a water services provider is a water use. (Thompson, 2002).

At present (Thompson, 2002) the practice is applied that water provided to a user by a water services provider is considered a water use and that Section 25(2) of the NWA is applicable when the use of that water is traded.

It is submitted that this is wrong because water obtained from a canal of a water services provider is not a water use and could therefore not be traded as a water use. It should be an internal arrangement with the water service provider to trade the water from one member to another member and regulated in terms of the conditions for provision of water services of the water services provider.

If, for instance the water is provided by a WUA it should be contained in the association's constitution. If the water is provided from a Government Waterworks it should be contained in the rules applicable to the provision of water from that waterworks.

It would appear that the simplest solution would be to amend the NWA so that such water uses (the taking of water from a canal) can be included in the definition of a water use and can therefore be regulated in terms of the NWA, Section 22(1).

If this approach is not taken the issue can be dealt with as outlined in paragraph 3.2.3.1 below.

If a trade takes place between a non-member and a service provider and the water will not be supplied by the water service provider then that is a trade of a water use and accordingly constitutes a trade between the water service provider and a non-member. However, the person to whom the service provider supplies the water should also be involved in the transaction.

### 3.2.2 The framework provided by the NWA that regulates the use of water

This section deals mainly with the provisions made under Chapter 4 of the NWA regarding the use of water and specifically with the processes that will eventually lead to the authorising of water uses by way of a licence. Once the transition to the new environment is completed one of the preconditions for trading in the rights to use water, will be fulfilled. The licences issued will contain the clearly defined authorisations and the specification of the conditions under which the water use entitlement are exercised.

An outline of the relevant items contained in the NWA that specifies the interim steps governing the use of water and the process to be followed towards the issuing of licences for the rights to use water will be highlighted in the following discussion.

The Minister of Water Affairs and Forestry is responsible for authorising and regulating the use of water, except if the Minister has assigned the power to a specific catchment management agency in which case this agency has the power for the specific area.

The details related to use of water is specified in Item 21.

The Minister may in terms of Section 23 determine the quantity of water for which a responsible authority may issue general authorisations and licences from the water resource in the area concerned.

A person may in terms of Section 22(1) only use water if that water use is;

- permissible under Schedule 1 to the Act;
- permissible as a continuation of an existing lawful water use in terms of Section 32;
- permissible in terms of a general authorisation;
- authorised by an individual licence; or
- authorised by licence due to a process to issue compulsory licences.

If an envisaged water use is not allowed under Schedule 1, does not fall within the scope of an existing lawful water use or an issued general authorisation, then a licence is required for that use. If a general authorisation is revoked or has lapsed without the issuing of a new general authorisation and a person wants to carry on with that water use, a licence must be obtained. In terms of Section 22(2)(a) a person who uses water may only do that subject to the conditions contained in the relevant authorisation. In terms of Section 22(2)(b) use is subject to any limitation, restriction or prohibition in terms of the Act or other applicable law.

In terms of Section 22(2)(d) and (e) water may not be wasted and any seepage and run-off resulting from that use must be returned to the water



resource from which the water was taken unless the responsible authority directs, in writing, otherwise or if provided for by the relevant authorisation.

The Minister may in terms of Section 26(1) require that a water use must be registered with a responsible authority. These regulations have been issued and a process started to register all water use as it took place on the date of registration irrespective of whether the use was lawful or not. A new water use may not commence unless it is registered.

The details of the terms under which a person can use water as an existing lawful water use are contained in Section 32. The provisions regarding general authorisations to the use of water are described in Section 39(1).

The use of water as authorised by a licence can happen in two ways:

- due to an application of an individual; or
- due to an application as part of the compulsory application process.

Licensing can occur as part of a compulsory licensing process in terms of Section 43. In the absence of such an invitation the person who wants to use water must in terms of Section 40 apply for an individual license.

A compulsory licensing process is followed in cases where, amongst others, water resources are under stress or the aim is to achieve equity in allocation

After providing for the Reserve and international obligations, the basis for granting a licence to use available water will be to achieve beneficial use in the public interest that includes the need for programmes of corrective action.

The factors that are taken into account before issuing general authorisations and licences are contained in Section 27(1). The factors are repeated below because it illustrates the range of issues considered as important when the prioritisation of a particular application as well as when preferences for evaluating competing applications for specific water uses are considered. The range of issues that the list of factors covers, indicate that such a process would be both complex and time consuming. It would appear as if some of these factors will also feature in the regulations that will have to be adhered to in order for the trade in the right to use water to take place.

Factors that should be considered when issuing general authorisations and licences are:

- existing lawful water uses;
- the need to redress the results of past racial and gender discrimination;
- efficient and beneficial use of water in the public interest;

- the socio-economic impact of the water use or uses if authorised and the failure to authorise the water use(s);
- the likely effect of the water use to be authorised on the water resource and on other water users;
- investments already made and to be made by the water user in respect of the water use in question;
- strategic importance of the water use to be authorised; and
- the probable duration of any undertaking for which the water use is authorised.

One of the conditions referred to in Chapter 2, regarding the right to use water, is that of a clear description of the conditions attached to authorised uses of water. In Section 29, the conditions that could be attached to a licence or a general authorisation include amongst others, the considerations:

- relating to the protection of the water resource in question;
- relating to water management by specifying management practices and general requirements for any use, including water conservation measures and requiring the preparation and approval of and adherence to, a water management plan;
- setting out the specific quantity of water or percentage of flow which may be taken;
- setting out the rate of abstraction;
- specifying the place from where water may be taken;
- specifying the times when water may be taken;
- identifying or limiting the area of land on which any water taken from a resource may be used;
- which are necessary or desirable to achieve the purpose for which the licence was issued; and

in the case of a licence;

- specifying times when water may or may not be used;
- containing provisions for its termination if an authorised use of water is not implemented or not fully implemented;
- designating water for future contingent use; or
- conditions which have been agreed by the licensee.

In cases where a licence is issued which result in severe financial loss when compared to, amongst others, existing lawful use of water, compensation can be claimed from the water tribunal. Section 22(6) sets out the conditions under which such an application for compensation can be considered.

### 3.2.3 The facilitating of a water market by the NWA

Water use authorisation is based on a purely administrative system guided by the objective that eventually all significant water uses will be authorised by

way of a licence. The NWA allows for the creation of a market in the trade of the entitlements to the use of water should it become desirable in certain areas. However, trade will be subject to varying degrees of control depending on whether the intended trade is within a single user sector or between sectors, within or between the area of jurisdiction of a water services provider or within water management areas. Trade should be conducted in such a way that the efficient use of a water resource is enhanced based on social and economic considerations and is intended transfer is sustainable over the long run.

For this reason Section 26(1)(l) allows the Minister of Water Affairs and Forestry to make regulations related to transactions in respect of authorisations to use water, including but not limited to-

- the circumstances under which a transaction may be permitted;
- the conditions subject to which a transaction may take place; and
- the procedure to deal with a transaction.

These regulations may differentiate between different resources, classes of water resources and geographical areas. No regulations have been published so far and will most probably only get attention after the process of compulsory licensing is completed. Once the regulations have been published and accepted it will assist in establishing a market in the trade in the rights to use water.

It is submitted that transactions regarding the transfer of water use may under the present situation still take place provided that the necessary authorisation is obtained amongst others in accordance with Section 25.

Water use entitlements for irrigation use can be transferred at the request the person authorised on a temporary basis and on conditions determined by the water management institution. The applicant can use some or all of that water for a different purpose or allow the use of some or all of that water on another property in the same vicinity for the same or similar purpose. Such actions are permissible in terms of Item 25(1). Operational rules have been issued to implement such transfers (DWAF, 2001).

Item 25(2) allows for the possibility that a person holding an entitlement to use water from a water resource in respect of land can surrender that entitlement or part thereof to facilitate a particular licence application for the use of water from the resource in respect of other land. The surrender only becomes effective if and when the application is granted. Operational rules have also been issued (DWAF, 2001) to implement this provision.

The water management institution must report annually on any permission granted under Section 25(1) and every application granted under Section 25(2). Transactions in terms of Item 25(1) constitutes a special kind of trade because apart from its temporary nature, the provision for the transfer of the

water use is for the same person to a different use or a transfer of the use by the same person on another property. The provision of Item 25(2) can be considered a trade if the transfer of entitlement is between persons (parties).

#### 3.2.3.1 The role of the water service provider

A water services provider is a separate juristic person formed with persons belonging to it as members. Such a separate juristic person can, for instance, distribute the water to its members. Others only regulate the water in the river while each member takes the water for own usage from the water resource. Such water service providers can be companies established without gain or, as is the more general case, WUAs. The WUA is a water user in terms of the NWA, the persons to whom the water is supplied are members of the association and they have a right to receive water in terms of the constitution of the association and not the NWA. Such a right is considered as property and protected as such under the Constitution.

This situation must be distinguished from the case where persons obtain water from a separate organisation of which they are not members. It could be a service provider (for example a local authority or public water service provider) who supplies water in terms of an Act or a contract to consumers. The water services provider derives the right to take water from water resource subject to the legal instrument that has established it. The rights of the persons to whom the water is supplied depends on the provision of the Act or contract. Usually these rights are not tradeable. (If it were, it could in principle at least provide for a transfer between sectors).

The Minister of Water Affairs and Forestry may according to Section 92 establish WUAs.

They operate at the local level as cooperative associations of individual water users which may be from more than one sector and undertake water related activities to their mutual benefit. Previously only irrigation users could be members of Irrigation Boards. A collection of water users can, with the approval of the Minister, form a WUA. All existing Irrigation Boards should transform to WUAs. WUAs cannot alter or abate water uses except if the power is delegated to them. The association only manages rights of members as provided for in the constitution of the association.

If the member of a WUA who receives water from a canal owned by the WUA wants to trade that water then the trade must take place in terms of the constitution of the association. If the constitution does not provide for this then it must be amended. If the trade takes place between the WUA and a non-member then such a trade must take

place in terms of the provisions of the NWA. It might be that the conditions of authorisation of the WUA is such that this kind of trading is not allowed. It would appear that this opens the way for inter-sector trading - at least in principle.

Water obtained from a government water works are governed by Chapter 4 of the NWA. At present it would seem as if these provisions only apply in the case where water is released from the works into a river to be abstracted by different water users then the trade should take place as is the case for individual users to be specified.

The NWA does not make provision for the situation where water is supplied by the state by way of canals to different users (see 3.2.1.10 above). If the State takes water from a water resource to supply irrigators then it is a water use regulated by the NWA (this is similar to the case where water is supplied to users from a canal by a WUA). The NWA should be amended to cater for this situation.

In the meantime the situation, where government waterworks provides water by way of a canal to different users, is somewhat confusing and several approaches are possible;

- The state can conclude agreements with the different irrigators and other water users setting out the rules under which water services from these works are provided;
- Alternatively a WUA could be established so that such an agreement can be made between the State and the WUA, and water is supplied to the different irrigators as provided for in the constitution of that association.

#### 3.2.3.2 Recognition by the NWA that water is an economic resource

The NWA in Section 56 provides for a water use pricing strategy. Such a strategy has been established in Government Notice 1353 of 12 November 1999. The following three aspects are highlighted from this Notice.

##### a) User charges

User charges can be used for water resource management, water resource development and achieving equitable and efficient water allocation. Provision is made for the recovery of the full financial cost of supplying water. Such charges will be phased in over time. In addition provision is also made an additional charge (called an economic charge) to be levied in water stressed areas that in some

way will reflect this scarcity as expressed in the opportunity cost of water. Due to the difficulty of this concept it is doubtful if it will ever be implemented.

b) Water allocation by public bidding

This process could be followed in water scarce areas after compulsory licences have been issued as per Item 5.3.3. (Government Notice, 1353, 1999). New permits for the remaining water can then be allocated according to a bidding or tendering process in such areas or sub-areas. The bidding process will only be used as an initial allocating mechanism since the permits representing water use entitlements would not be traded fully among competing water users. Maybe it should also be allowed under Section 26(1)(l) of the NWA.

c) Water markets (Trade in the entitlement to use water)

Item 5.3.3 (Government Notice 1353, 1999) also explicitly refers to water markets (Sections 25 and 26(1)(l) of the NWA) which provides for the trading in water use entitlements that acknowledges the benefits of the market approach but qualifies this in the sense that external cost on the rest of the local economy must be taken into account. Trading must therefore be subject to control in the public interest. Regulations in terms of Section 26(1)(l) that will ensure public interest must still be made.

### 3.2.4 Concluding remarks

It would appear that from a legal point of view the necessary conditions for the trade in water use entitlements are in place. The issue of the definition of a water use where water is provided by way of a canal must still be clarified. The NWA can be amended to make provision for it or the constitution of the service provider can provide the guidelines to deal with this occurrence.

The trade in entitlements to use water will be possible once the entitlement has been formulated in a license which,

- defines the entitlement to use water
- specifies the conditions under which the entitlement can be exercised trading can take place. Trading however does not have to wait for the compulsory licensing process since provision is made at present for the trade in entitlements under Section 25(2).

The efficiency and number of transactions that will occur under such a set of enabling provisions will depend, amongst others, on the degree of control and other measures that will be required by authorities to protect third parties. This issue will be discussed in Chapter 4.

## **CHAPTER 4: THE EXISTENCE OF A SOUTH AFRICAN INSTITUTIONAL INFRASTRUCTURE THAT SUPPORTS A WATER MARKET**

### **4.1. INTRODUCTION**

The purpose of the discussion in this chapter is to determine what mechanisms have been created in terms of the NWA to facilitate trade in water use entitlements. Only the trade of water use entitlements for the taking of water as it relates to surface water is considered. The utilisation of ground water sources is not discussed.

The process followed by both the authorities to assess an application to trade and that followed by the applicant will be discussed. In addition the administrative bodies that are at present dealing with applications to trade and those that are envisaged to deal with the matter in future will be discussed briefly.

The emphasis is on how the market functions and not on how well it functions. The reason for not presenting a detailed discussion on the operation of the market itself is because the new approach to water management in South Africa is of recent origin and it will take a number of years before it is fully understood and implemented.

The categories of institutions needed for a water market to function have been discussed in Chapter 2 and are briefly repeated below:

- Formalisation of the entitlements to use water, which will include, inter alia, a clear definition and specification of the entitlements containing a description of the allocation, seasonal use patterns, assurance of supply and the quantity and quality of return flows.
- Contracting mechanisms that will outline the procedures that must be followed by the contracting parties who want to trade an entitlement including the role of various regulatory bodies that should oversee the application and approval of the trade in water use entitlements.
- Availability of and access to information on and the procedures needed to trade water use entitlements and mechanisms for obtaining and providing the information on water resources available for trade
- Administering and enforcing the provisions of the respective entitlements to the use of water.

The existence of these requirements will be discussed in the light of the present procedures used in the case of applications to trade water use entitlements.

The rest of this chapter is based on information;



- contained in the draft NWRS (2002);
- numerous interviews with experts on water management, officials at the DWAF, members of the Steering Committee for this project and members of the project team who was knowledgeable on specific aspects related to the matter;
- The completed chapter was circulated among experts for final comments;
- Although the chapter contains a limited number of references the final product is the result of wide consultation.

#### 4.2. PRESENT SITUATION

From the analysis so far it is evident that trade in water use entitlements is a policy option of the government and is possible and allowed for under the NWA as outlined by Thompson. Previously the trade in water use entitlements involved a legal process where a transaction had to be approved by the Water Court. Since 1994/1995 trade became more frequent in water control areas because the procedures were simplified. Trade in water use entitlements is thus not a new phenomenon and has taken place over a number of years since 1994/1995 under the old act on an ad hoc basis (Nieuwoudt, 2000). The fact that administrative procedures have been created by the authorities in terms of the NWA to allow for the trade of water use entitlements means that the concept is already an existing element of water resource management in South Africa.

All the structures provided for in the NWA are not in place. The conditions that will have to be adhered to in order to trade a water use entitlement as well as the various bodies, which will be involved in the eventual approval of the trading of water use entitlements will change over time. Adjustments will be made as progress is made with the implementation of the water related policies and provisions of the NWA.

At present the DWAF is responsible for administering all aspects of the NWA on behalf of the Minister (NWRS, 2002). The role of DWAF will progressively change as regional and local water management organisations such as CMAs are established and capacitated, and the responsibility and authority for water resources management, powers, duties and functions are delegated and assigned to these bodies.

According to this vision the eventual role of DWAF will mainly be to provide the national policy and regulatory framework within which other organisations will directly manage water resources. DWAF will maintain the function of general oversight of the activities and performance of the various bodies to ensure the necessary co-ordination of regional and local activities.

#### 4.3. WATER USE AUTHORISATIONS AT PRESENT

All significant water uses will eventually be authorised by way of a license. The licenses will give existing or prospective water users, formal authorisation to use water for productive and beneficial purposes. Other uses will be allowed in terms of General Authorisations and Schedule 1.

The licenses will be issued by a "responsible authority" which at present is DWAF but it could also be the CMAs when they are operational.

As a transitional measure the NWA permits the continued use of water that actually has taken place when the NWA came into operation and was lawfully used under any law that preceded the NWA. These existing lawful water uses may be continued with under the same conditions attached to the use until such time as it is formally licensed.

In the meantime the changing needs of the country with respect to water use must be accommodated. Accordingly license applications can be made individually on an ad hoc basis or as part of a compulsory licensing procedure. In the case of individual applications it would generally be for new water users, existing users who want to increase or change their water use and existing users who wish to continue their use in terms of an existing limited duration authorisation.

All applications, whether individual or compulsory, must be evaluated in terms of the broader water resource management and social factors specified in Section 27 of the NWA.

The essential information that must be contained in a license and the conditions under which the water use is authorised is described in Sections 28 and 29 of the NWA. Such conditions will not be applied rigidly and as far as possible a process of negotiation will be followed to reach an agreement on the conditions attached to the specific water use. Every case will be decided on its own merit.

Special mention is made in the NWRS regarding one of the important attributes of a license namely its period of validity. The departmental evaluation procedure for license applications contains broad guidelines for determining the license period and is dependent on, for instance, in the case of irrigation, on the type of agricultural crop that the water is used for.

Water use may also be subject to other conditions, which are intended to ensure that the total use from a particular water resource is not unreasonably exploited. Individual uses should not unreasonably harm other uses and the water resource must be adequately protected (i.e. the Reserve can be met) and is effectively managed. The conditions attached to licenses are not fixed and may change over the life of the license period. Accordingly conditions,

other than the license period, may be amended on review which occurs at least once every five years to reflect the changing conditions of the water resource itself or water use priorities.

All licensed water users must adhere to conditions attached to the entitlement to use water and the responsible water management bodies are empowered to enforce adherence to such conditions.

A mechanism will be created for the formalisation of the conditions applicable to each entitlement to use water and the enforcement of the conditions of the entitlements.

In terms of the institutional requirements stated in the introduction provision is made for the formalisation of entitlements in terms of a license and furthermore that the conditions attached to the license will be enforced.

#### **4.4. PROCEDURES TO ALLOW FOR THE TRADE IN WATER USE AUTHORISATIONS**

##### **4.4.1 Licenses**

It is a requirement that the responsible authority must verify the extent and lawfulness of all registered water uses before compulsory licensing is undertaken. Ad hoc verifications of individual water use authorisations may also be undertaken if it is necessary to license the use, for instance, to facilitate the transfer of the water use authorisation. Eventually all registered water uses will be verified. It is important to note that the water uses registered are the use as it took place at the date of registration and not existing lawful water use. The registered water use may be unlawful.

The licensing of all water uses will take time. Schedule 1 uses are not registered and not all water uses of the General Authorisations are registered. Therefore, in the interim, ad hoc verification is the norm as far as permanent trade in water use entitlements is concerned. It is expected that it could be the rule for a long time to come as the conversion of all existing lawful water uses into licenses could take up to 20 years.

In areas where water is scarce and the compulsory licensing procedure has not been implemented yet, trading of the existing lawful water uses will be the mechanism to allow for new and the expansion of existing development to take place. Even in areas where licences have been issued as part of the compulsory licensing procedure trading of entitlements could be the mechanism to ensure the effective use of water. It could, for example, be that the compulsory licensing procedure is only implemented to provide for the Reserve, rectify over-allocation from the water resource, to meet international obligations and rectify unfair and disproportionate water use. If

so, then the trading of entitlements could be the mechanism to allow water re-allocation for other reasons.

What is important is that the entitlement to be traded must be secure in its fundamental attributes. The defining attributes must be known and free from disputes. At present only some existing lawful water uses can be classified as known and free from disputes. These are, for example, those entitlements authorised by the Water Courts (and exercised), and the schedules for Government Water Schemes and Irrigation Boards, areas where special Water Acts are applicable and final allocations within Government Water Control Areas. Water use in some of these schemes can still be over-allocated. This does not prevent transfer but it must be acknowledged that user entitlements can be reduced by compulsory licensing.

If there is a need to trade entitlements to water in an area where the rights are not known and free of dispute, then a process should be implemented to secure the entitlements as outlined above.

An existing license is therefore not a prerequisite for a water market to function since a process has been introduced to deal with applications for the trade of an existing lawful water use. It may be that once the water uses in an area are specified by way of licenses, that a market may function better in that area since the verification of the water use will no longer apply and thus make the procedure less cumbersome.

The critical issue regarding the efficacy of the water market is however not whether trade is based on the trade of existing lawful water uses or taking place or in areas where compulsory licensing has been completed and trade in licenses takes place. The critical issue is the existence of effective administrative systems to facilitate trade. It is possible that even after licences have been issued in terms of the compulsory licensing procedure that effective administrative systems are not in place to facilitate trade.

#### **4.4.2 Provision for transfer**

In Section 25, the NWA provides for two distinctly different circumstances in which water use authorisations may be transferred. It is important to note that Section 25 (2) will not be applicable in all cases where an entitlement to water use is traded. If the entitlement to be traded is contained in an existing lawful water use and a permanent trade takes place, then Section 25(2) should always be applicable. If the right is contained in a license, then Section 25(2) need not necessarily be applicable. The license is however still issued. For instance, if only part of an entitlement contained in a license is traded, then it could be that only the conditions of the license should be amended. The transferor is allowed to carry on using the remainder of the entitlement. A new license is issued to allow the transferee to use the part of the license that has been traded.

Section 25(1) refers to the temporary transfer of water authorised for irrigation either on the same property for a different use or among others to another property for the same or a similar use. This provision could be used to transfer the water on a temporary basis to be used on another property by another person than the property and person to whom the entitlement relates. In the latter case, the two properties may, but need not necessarily, be owned by the same person. Although every case will generally be considered on its own merits and within its local context, temporary transfers will be for one year only, with the option of applying for an extension of a further year. Users must apply to the water management institution that has jurisdiction in the area, usually the CMA. The WUA provides the recommendation to implement the transfer. Even in the case of a temporary transfer it cannot take place before the lawfulness of the water use has been verified.

There is uncertainty about the extent to which the required procedure for temporary transfers is adhered to. This could be due to the nature of temporary transfers that can in certain cases occur on an informal basis. At present the temporary transfer of the entitlements to the use of water takes place frequently. A formal process is not followed in all cases. In the past Irrigation Boards handled this function. The function has not been formally delegated to CMAs or WUAs. This needs to be done to ensure that the temporary transfer happens in a structured way.

Section 25 (1) therefore does not refer to the trading of entitlements to use water. It allows the owner of an entitlement to transfer part of the water use to another person or property on a temporary basis. The method in which such a transaction is concluded is not prescribed and it can take the form of a barter transaction or a cash rent. It is not difficult to envisage a market developing in the temporary transfer of water between water users but this needs formalisation, reporting and regulation to ensure that the water resource will not be harmed and can be effectively managed during the period of concern.

If there is a need for such a short-term exchange of water use, the NWA allows for the possibility of such a market to develop in future. Some of the aspects that will need further attention are:

- The security attributes of the rights to use water entitlements in an area.
- The specific hydrological considerations in an area.
- The procedures to be followed by the empowered institution as well as the applicants.
- A mechanism to provide information on the availability of water for temporary trade.

As stated above Section 25(2) refers to permanent transfers, which may be effected by one user offering to surrender all or part of an entitlement to

facilitate a license application by another user. Transfers of this nature constitute trade in water use entitlements, which may be used to achieve equity of access to water, or to increase the efficiency of use by moving water use from lower to higher value uses. In the Section 25(2) case the application will be subject to all the relevant requirements of the NWA regarding an application for a license, including the need for Reserve requirements to be taken into account. Due to the fact that it is an existing use, the Reserve will not be further affected and this can be transferred. Permanent transfers become effective only when the necessary license has been granted. They may be authorised only by a responsible authority, which may attach conditions to the new license that are different from the surrendered entitlement. One of the conditions of the new license may, for instance, be that the new user must pay compensation to the holder of the original entitlement.

Transfers, whether temporary or permanent, will only be permitted where both the original and transferred water uses are from the same water resource. The resolution of the total resource into smaller entities will have to be determined beforehand and is catchment specific. Procedures have been developed to deal with such transfers of water use authorisations. The extent to which authorised water use may be traded; in terms of quantity and quality across water use sectors must be considered as well as defined before such trading can be permitted. A careful balance will have to be maintained between the need for some regulating measures and the cost that such measures might carry. If the costs are high relative to the benefits of trade it could place a restriction on the attractiveness of trade.

After compulsory licensing has been completed regulations could be introduced to specify the circumstances under which trade will be permitted and the conditions under which a transaction may take place. This will provide a format for a nationally or regionally consistent basis of dealing with water transfer applications.

#### **4.5. ISSUES ON THE ASSESSMENT OF WATER USE LICENSE APPLICATIONS**

A trade of an existing lawful water use involves the surrender of an entitlement or part thereof in order to facilitate a license application by the transferee. The application will still be subject to all the requirements regarding an application for a license.

In the case where a new application(s) is being considered, the total resource availability less water needed for the Reserve, less international obligations, strategic water use considerations and inter basin transfers, as applicable, must also be quantified. Since it is a new application, the existing lawful water use must be deducted to determine whether there is still additional water available. The quantities that are allowed for other uses must in the

first instance be in accordance with the provisions made in the NWRS and the CMS where available.

In the case of an application for a permanent transfer of an existing lawful water use the first critical consideration becomes that of determining the legality of the registered existing lawful water use.

#### 4.5.1 Existing lawful water use

Existing lawful water use is defined in Section 32 of the NWA and refers to water use which has taken place during a period of two years immediately before the date of commencement of the NWA or which has been declared an existing lawful water use under Section 33. The Minister issued a general declaration in terms of Section 33 that was subsequently amended to allow certain discontinued and contemplated uses that do not fall within the two year stipulation to be declared as existing lawful water use. The provisions of the NWA in these two sections are aimed at limiting the extent of dormant water entitlements that are not used. In countries where dormant or sleeper entitlements are significant it has been identified as a factor that has an inhibiting influence on their water markets (Chile and Australia). No statistical data is available on the magnitude of dormant water use entitlements in South Africa although it is considered to be small, there are some specific schemes where this is a significant factor such as the Berg River and Orange Rivers.

Existing lawful water use can be very difficult to assess. The degree of difficulty involved in the assessment has a particular bearing on the time it will take to complete the administrative procedure required to approve an application to trade. Actual water use for which permits were issued under the Water Act 54 of 1956 in terms of Sections 62 and 9B and scheduled use in terms of Section 63 and Section 88 is not a problem. Use for which permits were issued under the Forestry Act is also not problematic since it is quantifiable from departmental records. The same applies where the water court apportioned the normal flow.

The problem arises when someone has exercised a riparian right and is abstracting what they regard as their fair share of the normal flow in accordance with the old water act but do not have documentation to verify their use or entitlement. This situation applies to a large proportion of irrigation uses in South Africa. Operational procedures have been formulated to quantify such use and if over irrigation occurred, only the legal portion will be licensed and the rest licensed on a short term basis if water is available. If not, the excess water use will have to be curtailed without compensation.



#### **4.5.2 Examples of issues encountered in verifying existing lawful water use**

In the case of an application for a proposed trade a whole range of possibilities may be found regarding an existing entitlement. For instance, the present use may be one for which an existing permit exists or it could be a previous riparian entitlement with no documentation or a declared existing lawful water use in terms of Section 33 or a totally unlawful use. Based on experience it appears that applications for a transfer may contain many inaccuracies with respect to the registered existing lawful water use. The inaccuracies may be an overstatement, understatement, no application has been made to register the use, or that the use patterns that have changed over time and bear no resemblance to the original use. Depending on the complexity of the issues involved in the verification, inputs may be required from, amongst others, hydrologists, engineers, biological scientists, agriculturists and lawyers to determine the correct specification of the individual entitlement to use water.

#### **4.5.3 Hierarchy of the complexity of authorisations to trade**

Not all applications for a trade of a water use authorisation will involve the same degree of complexity with regard to the determination of existing lawful water use. Similarly the assessment of third party effects involving the hydrological, the strategic considerations as contained in the NWRS and Catchment Management Strategy (CMS) or its impact on the community may differ in complexity.

It is not only the verification that can involve a challenge with respect to what is intended to be traded. Examples of the kind of complexity encountered are those dealing with the level of assurance that is associated with a given water use entitlement. If the trade is between sectors, for instance, if the transfer is from agriculture to residential or industrial use, assurance levels will have to be taken into consideration. The level of assurance of supply to agriculture is lower than that required for an industrial or residential use. This may also apply within the same sector where individual users have different assurance requirements. The original entitlement will in this case first have to be converted to the equivalent assurance level to establish the quantity of water that is actually available for trade. The water use available in such a case may be considerably less than it was originally thought to be.

Transfers that affect the flow pattern of a river or stream may have considerable impact on third parties including the water available for the Reserve between different points of water abstraction. For instance the seasonal pattern of the intended use might differ between the transferor and transferee. This case can be further complicated. For instance, an application which involves the trade of an entitlement to water use in a tributary stream



for the seasonal use to produce a cash crop to a proposed use on the main stream for year round water availability for sugarcane production.

In general therefore the issues related to the transfer of water use entitlements along rivers and streams present a unique set of issues. The degree of complexity may increase as the distance between the present use and intended use under consideration increases. It can involve, amongst others, whether the transfer requires a change of water use from a tributary to the mainstream or from a downstream to an upstream use or vice versa.

A list of most of the reasons why an application can be rejected is provided in Appendix 3. There are cases where the so-called third party effects of a proposed transfer are small. A case in point is where adjacent or nearby farmers trade water use entitlements for irrigation purposes. In the case of Government Water Schemes where the entitlements are known, considerations might be reduced to such simple questions as to whether the infrastructure can handle the proposed transfer. Examples where a large number of cases should fall in this category is the Berg River Irrigation Scheme and along the Vaal River.

The time taken to evaluate an application for approval or refusal will therefore also differ from case to case. The ease of dealing with the trade of entitlements could be divided into six categories that can be ranked in an ascending order of complexity;

#### Category 1

Trading of entitlements within the irrigation sector where water is supplied by Government Water Schemes and schemes belonging to WUAs. These entitlements are usually secure in their fundamental attributes so that it is usually a matter of whether the infrastructure could handle the proposed transfer, provided the necessary land is available and the land is not subject to land claims or bonds.

#### Category 2

Trading of entitlements between different sectors where water is supplied by a Government Water Scheme and schemes belonging to WUAs. Although these entitlements to water are, most of the time, secure in their fundamental attributes it could be more complex than category 1 due to the differences in assurance of supply between the different sectors.

#### Category 3

Trading of entitlements within the irrigation sector where water is not supplied by any scheme but the irrigators abstract water with waterworks belonging to themselves and where the entitlements to the water use are secure in their fundamental attributes. For example where a water court

allocated the normal flow or final allocations have been made in a Government Water Control Area. These are usually more complex than categories 1 and 2. For instance if the water is abstracted from the natural flow of the river without the aid of storage and return flows could affect the availability of the water to the other users.

#### Category 4

Trading of entitlements between different sectors where water is not supplied by any schemes but the water users abstract the water with waterworks belonging to themselves and the entitlements are secure in their fundamental attributes. For example, where a water court made an allocation or allocations have been made in a Government Water Control Area. This could be more complex than category 3 due to the differences in assurance of supply between the different sectors.

#### Category 5

Trading of entitlements within the irrigation sector where the water is not supplied by any schemes, but the irrigators abstract the water with water works belonging to themselves and the entitlements are not secure in their fundamental attributes. For example in areas where the water court has not allocated the normal flow and no water allocations have been made. These are much more complex than the other categories. The fundamental attributes must first be determined and since the water is abstracted from the natural flow of the river without the aid of storage, the return flows could affect the availability of the water to the other users.

#### Category 6

Trading of entitlements between different sectors where the water is not supplied by any schemes but water users abstract the water with waterworks belonging to themselves and the entitlements are not secure in their fundamental attributes. For example, in areas where the water court has not allocated the normal flow and water allocations have been made. This could be more complex than category 5 due to the differences in assurance of supply between the different sectors. This classification is built mainly around the issue whether the water use in question is secure in its attributes, how the water is obtained and whether the trade occurs between sectors. Implicit in this classification is also the issue of third party rights and the requirements of the aquatic environment, which therefore tend to become more complex as fundamental attributes become more uncertain.

The transaction cost of executing a trade will therefore also increase (in terms of time involved and other application costs) as one moves up the hierarchy. Based purely on this argument one would expect trade in water use entitlements to be more common in the lower-hierarchical categories.

The evaluation of the ease or difficulty with which trade takes place at present should not be generalised. In most cases the assessment of whether a trade should be allowed or not will be relative easy such as for instance in the case of Government Schemes.

#### 4.6 LIMITS TO TRADE (WILLING-BUYER/WILLING-SELLER PRINCIPLE)

Apart from the verification of existing lawful water use, trade that involves the issue of a license to the transferee must also adhere to the other stipulations of Section 27 of the NWA. The factors specified are all part of the so-called third party effects. Factors that resort under this heading are amongst others:

- Whether the proposed transfer will be an efficient and beneficial use;
- How it relates to the empowerment of the previously disadvantaged persons;
- It's socio-economic impact and effect on other users;
- The class and resource quality objectives of the water resource;
- The duration of the authorization; and
- Whether it fits in with the NWRS and CMS for the catchment in question.

As has been discussed in Chapter 2, markets function best in cases where there is little reason to intervene in the private transaction between willing buyer and willing seller.

In the case of the trade of entitlements to water there will always be an intermediary stage that will have to ensure that third parties are not harmed by the intended trade.

If there is a possibility that the trade could impact on a third party, the environment or even the future developmental potential of a region, then there appears to be two possible actions if such effects are judged to be significant. The application could be refused or alternatively an impact study should be requested to indicate the extent of the third party effects and the possible mitigating measures. If the effects are of such a nature that the negative effect on third parties can be mitigated, then it should become part of the cost of the transaction.

There might even be cases where trade in water uses should be prohibited. For instance trading of entitlements that could affect the aquatic environment and water for basic human needs should be prohibited. These issues are mainly embedded in the Reserve. A person who has obtained an entitlement without paying any consideration to it or where the entitlement is not capitalised in the land or the undertaking she/he should not be allowed to transfer that entitlement separately from the land or the undertaking with the

view to gain benefit from the transaction. The same should apply to a person who has obtained an entitlement for basic needs.

Only some of the third party effects specified in Section 27 of the NWA will be discussed below. We will return to the issue of third parties in paragraph 4.7.

#### **4.6.1 The need to rectify the results of past racial and gender discrimination**

It should be stated that water markets deal primarily with the efficiency of water allocation and use and not with equity issues. Under ideal circumstances a water market will ensure the efficient use of water, given the existing ownership patterns. If provision is to be made for the re-allocation of water use authorisations it must be done by other means.

One example of an issue that needs redress flows from the communal ownership of land that is practiced in tribal areas where secure land rights were not in place. Under previous legislation, water was allocated to owners of land in terms of the riparian rights principle. In most cases it was the landowners who developed and used the water flowing past (or through) their properties. Very little or no development had taken place in the tribal areas due to the land rights issue as well as a general lack of resources. Water was therefor in abundance and shortages only occurred in times of drought.

In order to rectify this imbalance, the CMS should take account of the needs of all stakeholders in the catchment and ensure that the allocation policy adopted makes provision for this specific situation. In this case equity considerations should be the guiding principle.

It is important that the aspirations of the previously disadvantaged persons be accommodated. In many cases capacity building will have to take place in order to ensure that the allocated water is used beneficially.

The access of previously disadvantaged persons to water use entitlements should get priority in cases where surplus water is available for allocation. Various means can be developed to ensure preferential treatment of previously disadvantaged persons. Programs developed to support the enterprise of such upcoming farmers must accompany this allocation. Conditions can be added to the licenses to water use to provide for the sharing of water and to capacitate new farmers.

Although restrictions to the free exchange of water use entitlements are not propagated this is an exception. The purpose is the empowerment of previously disadvantaged persons and if water use is allocated on a preferential and favourable basis the trade of such entitlements should be restricted. It could be that the trade of such entitlements should only be

allowed to take place among the group of previously disadvantaged persons. Alternatively if the entitlements are not put to beneficial use it should revert back to the relevant authority for allocation to others on the same terms.

In cases where surplus water is not available but the need for projects aimed specifically at establishing previously disadvantaged farmers, water use entitlements will have to be bought by the authorities from present owners at market prices and transferred to the new owners.

The compulsory licensing procedure can also re-allocate water to previously disadvantaged farmers without compensation.

#### **4.6.2 Efficient use and beneficial use of water in the public interest**

Under previous legislation, permits were issued, provided the water should have been used "beneficially". Use was usually considered beneficial if the applicant was involved in an activity where the use of water will be profitable. Public interest is a much wider concept and also a much more vague concept to introduce. To some extent, it can be accepted that if the factors enumerated in Section 2 (a) to (k) of the NWA are met, the criterion of issuing licenses in the "public interest" will be satisfied.

#### **4.6.3 Socio-economic impact of water use or uses to be authorised**

This calls for a comparison of the benefits of allocating the license with the associated costs.

It is unfortunately true that virtually no allocations can be made without an effect on some party elsewhere. The philosophy of dealing with this dilemma should therefore be to maximise the advantages to the greatest number of people and to minimise the negative effects

No water use can take place without an effect on other users downstream, however small. The question is how much of the water available from a river can be allocated without a prejudicial impact on downstream parties? The principle of "acceptable prejudice" should be applied, which accepts that there will be an impact, but that it should be of a magnitude small enough so as not to be significantly detrimental to the prejudiced person's operations.

Authorisation may also be given if a particular use has positive socio-economic impacts.

In many cases, expert opinion (or common sense) would be sufficient to judge the impact of a proposed trade. If a case is more complicated, a formal cost benefit analysis may be needed so that the cost and benefit of a particular action can be evaluated.

Cost benefit analysis would be called for where inter-sector trade or inter catchment/sub catchment trade is involved. This will increase the transaction costs of this kind of trade.

A process should be followed involving those affected on the one hand and those who are interested and wish to be involved in the decision-making process on the other hand. Who, how and when they should be involved should depend on whether the impact of the trade on the affected persons is low or whether the public perceptions of the trade, the sensitivity of the water resources and socio-economic effect of the trade are low or high. Depending on whether the impact, perception and effect are low or high, the procedure could either be informal, formal or complex with the possibility of requesting an impact assessment and comments.

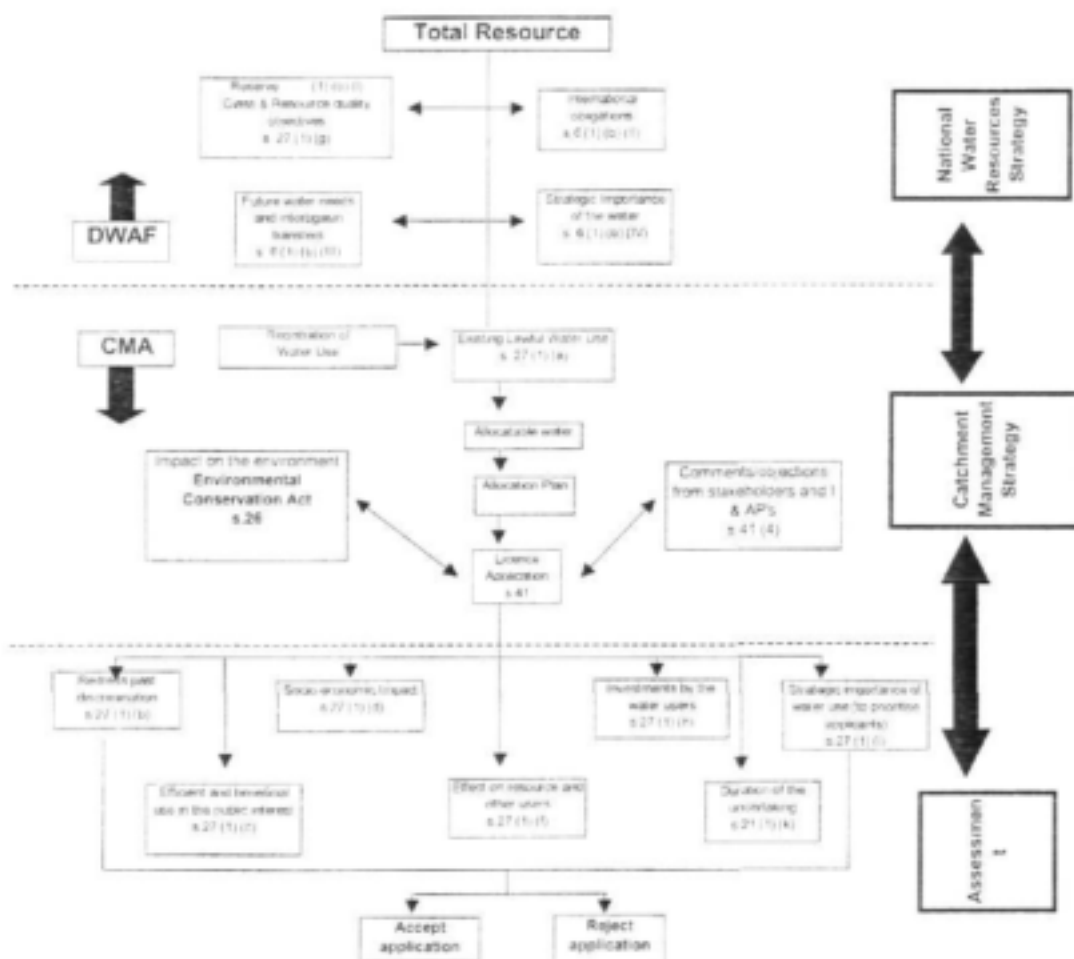
#### **4.7. SUMMARY AND EVALUATION OF THE ASSESSMENT PROCESS**

The discussion up to now emphasised the issue of the application for a license to allow a proposed trade, the enabling provisions of Section 25(1) and Section 25(2), the verification of existing lawful water use and the third party issues.

An overview of all the considerations involved in an application for a license, as derived from the NWA is provided in a diagram below. Diagram 4.1 is a flow diagram of the criteria used to assess an application for a water use license. It indicates the national criteria to be provided by DWAF as contained in the NWRS such as the Reserve, class and resource quality objectives, international obligations and strategic importance of water.

The second level structure is represented by the CMA which is guided by the CMS as derived from the NWRS. It spells out the processes that the CMA will be involved in when considering an application for a license namely the evaluation of existing lawful water use, impact on the environment and comments/objections from amongst others the stakeholders. If one is dealing with an existing lawful

DIAGRAM 4.1: CRITERIA TO BE CONSIDERED FOR THE ASSESSMENT OF WATER USE LICENCES



Source: JC Perkins, Internal DWAf document.

use the steps indicated of determining allocatable water and the allocation plan do not necessarily apply.

The application is subsequently assessed, in terms of the Section 27 criteria, as indicated in the diagram, before a recommendation is made. The extent to which the Section 27(1) considerations are met is an involved evaluation process. The evaluation procedure is contained in a departmental evaluation form. A copy is attached in Appendix 5.

In addition, the steps involved in assessing an application as outlined in Diagram 4.1. are also represented in the form of a checklist in Appendix 4.

The second level consisting of the CMAs and the CMS is not in place and

this function is at present carried out by DWAF.

Not all the national criteria that should be provided by DWAF are as yet in place such as, for instance, the provision of the final Reserve requirements.

The draft NWRS is due to be finalised soon and the CMAs are to be established in a progressive and phased manner. All existing lawful water uses will have to be verified. This could be done on an ad hoc basis as the need arises, as part of a compulsory licensing process or as part of a plan to verify uses in a specific area or sub-catchment such as the Upper Vaal River Catchment. The verification process will take time before it is finalised. It can be demanding in terms of the assessment itself and the process can be drawn out in cases where the assessment is disputed. The resources needed in terms of expertise, information and the available budget will determine the pace at which the verification process can take place. Of these two elements the availability of expertise will most probably be the critical factor.

The assessment of third party effects (Section 27) is required for all license applications. This will be the case regardless of whether the applications are new, part of a compulsory or an ad hoc application process.

Given the challenges brought about by the introduction of the NWA that encapsulates a new philosophy towards water management it is an achievement that the prerequisites for the functioning of a water market have been created. All four categories of the institutional prerequisites stated in the introduction are provided for, at least in principle. It may as yet not function optimally because all the building blocks are not in place.

As discussed,

- Provision is made for the description of entitlements in the form of a license. It will however be a long time before all the applicable water uses are licensed.
- A mechanism has been created whereby permanent trade in water use entitlements can be dealt with under Section 25 (1) and 25 (2).
- Provision is made for the enforcement of the conditions of use attached to the authorisations.
- Information on all trade possibilities and the rules and procedures can still be improved.
- The administration of all the various processes is not yet fully in place and the need for expertise to manage the new water management system can be demanding. This aspect is discussed further in paragraph 4.8 below.

The development of the water market will in future depend on the requirements of the participants and the degree to which those requirements can be complied with given the inherent characteristics of the nature of water.



#### **4.8. PROCESSES TO STRUCTURE ADMINISTRATIVE ISSUES TO DEAL WITH, AMONGST OTHERS, TRADE APPLICATIONS**

A compulsory licensing programme have been drawn up for the various WMAs where compulsory licensing may be necessary starting with areas of priority such as the Usutu to Mhlataze WMA and progressing to lower priority areas scheduled for completion in 2022 (NWRS, 2002).

A programme for the establishment of CMAs has also been prepared. In this regard five CMAs require priority namely Inkomati, Olifants/Doring, Breede, Crocodile (West) and Marico, and Mvoti to Umzimkulu. Two to three years have been allowed for establishing the CMAs and a further five years for establishing the executive structure of each CMA to become a fully functional agency.

A programme has been developed for dealing with International Water Use Agreements.

DWAF has started to verify some of the registered water uses mainly in the Upper Vaal River Catchment and the Mhlataze catchment. A project to compile a guideline that can be used to determine the lawfulness and extent of existing water use is in process and due for completion in the first quarter of 2004.

DWAF has started to develop various tools to allocate water through the compulsory licensing process such as a tool kit for water allocation, which includes the social factors to be considered when existing entitlements are curtailed as part of a licensing process. The first pilot project to test the compulsory licensing process will be undertaken in the Mhlataze River Catchment. Lessons learnt from this process will be valuable in smoothing the future ongoing compulsory licensing processes.

Priorities for ad hoc applications to trade water use entitlements could be based on the hierarchy specified in paragraph 6 or some other criteria. This would only be needed if there is a lack of resources (human and financial) and it will also depend on the number of applications received by the authorities.

#### **4.9 WATER MANAGEMENT ORGANISATIONS**

A three level structure has been proposed in the NWA that consists of the national level, the catchment level and the local level. The eventual role of DWAF will be to provide the national policy and regulatory framework within which other institutions will directly manage water resources, and to maintain general oversight of the institutions' activities and performance.

Accordingly DWAF will

- Progressively withdraw from direct involvement in water development, financing, operation and maintenance of water resources infrastructure.
- Transfer the responsibility for operating and maintaining infrastructure to other water management institutions.

Such a water management body may be a CMA, a WUA, a body responsible for international water management or any person or entity, that fulfils the functions of a water management institution. The powers and duties of a water management institution relate to water resources management in general.

The NWA defines a responsible authority, whose duties relate specifically to water use, and particularly to the authorisation of a water use by general authorisation or license. A responsible authority may be DWAF or a CMA to which the Minister has delegated or assigned this function.

It would appear as if the establishment and empowerment of CMAs for all Water Management Areas (WMAs) would be a priority for they would be the primary management organisation to deal with national policy at catchment area level.

Specific provision is made for the following organisations:

- Catchment Management Agencies (CMAs)
- Water Users Associations (WUAs)
- Advisory Committees
- Forums (although no specific reference is made in the NWA for catchment forums, these institutions are vital for stakeholder participation)
- International water management institutions
- Institutions for infrastructure development
- Water Tribunal

#### **4.10. The Division of the powers to authorise trade in water use entitlements**

The national level should be responsible for formulating the necessary policy and framework for the trade of water use entitlements and set the resource quality. Under normal circumstances the national level should only authorise those trades, that may have an effect wider than a catchment level such as, for instance, the traded water is to be used in another catchment from where the water is found or may affect a neighbouring state.

A CMA must ensure that the national policy is implemented at the catchment level. It should authorise a trade before it can take place for it is in a position to evaluate the effect of the trade on third parties within the catchment.

An argument could be advanced for allowing the WUA to fulfil this function if the impact of the trade is only restricted to the area of its jurisdiction (for example whether the existing infrastructure is capable of supplying the water to the transferees). Although the principle should be to make a decision at the lowest level that is functional the case for authorising a trade in a water use entitlement should be with the CMA or in its absence (in the interim by DWAF).

Since it can be unreasonable to expect the local level to have a sufficient overall view of the impact of a trade in water use entitlements on especially third parties (Section 27 considerations) one should be hesitant about giving the local bodies jurisdiction over the approval of permanent trade. The approval of temporary trade restricted to for instance members of a WUA or Government Water Scheme is a different matter.

WUAs should however be involved in the process to authorise the trade. If the trade has only an impact on the members of the association, then the WUA can make a positive recommendation for the authorisation of the trade to be approved with a minimum of further intervention by any higher body. If the trade could affect other persons, the water resource or a neighbouring state, then the national authority or the CMA should be more directly involved in the evaluation process to authorise the trade.

Associated bodies or organisations should assist the three level structures that deal with the authorisation of the trade. These organisations will mainly provide information that is needed before a trade could be approved.

For instance:

- If a policy is developed to allow trade for a specific need, for example socio-economic or economic development, then the organisations that could contribute to that policy should be involved,
- If it is necessary to determine whether the land is capable of accommodating the activity it is intended with, then the bodies with the necessary knowledge should be involved,
- If it is necessary to determine whether certain land is subject to land claims, then the bodies with the necessary knowledge should be involved.

It would be possible to give a general description of the functions and responsibilities of especially the second and third level structures. It is, however, important to note that CMAs and WUAs will be established in a progressive and phased manner. All CMAs will not necessarily have the same powers, duties and functions. The same applies to WUAs. The water

related problems in an area, the capacity available and the resources would determine what the organisational structure and the powers, duties, functions and responsibilities of the organisations would be. The main functions could therefore differ from area to area.

Some WUAs for example may not own any waterworks. In such a case they only control how, how much and when the different users abstract water from the rivers with waterworks belonging to the users. Where a WUA comprises more than one water user sector some inter-sectoral issues could also be dealt with on a local rather than a catchment level. CMAs could also provide infrastructure, especially in the case where water is provided to more than one sector.

Given these general considerations, the following comments regarding the trade in water use entitlements could be given on the list of functions and responsibilities at the different levels:

#### Water User Association

- Provide information on the effect of a proposed trade in water use entitlement.
- Approve temporary transfer of water use entitlements.
- Developing rules for temporary transfer of water use entitlements.
- Provide information on procedures for dealing with applications for trade in water use entitlements.
- Provide information on entitlements available for trade (both temporary and permanent).
- Perform the role of an enforcing agency.
- Raise local finances, collecting user charges etc.
- Provide local infra-structure.
- Etc.

#### Catchment Management Agency

- Approval of all intra-catchment trade applications within WMAs.
- Approval of WUA rules for temporary transfer of water use.
- Allocate entitlements for water use not required for the neighbouring states, the Reserve, inter-catchment or inter WUA transfers.
- Review of conditions attached to entitlements in the WUA.
- Inter-sectoral issues.
- Relations between catchment areas within a WMA.
- Apply national policy in catchment.
- Catchment area concerns.
- Infrastructure development.
- Etc.

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- In cases where second and third level management agencies are not yet fully functional approve a proposed trade in water use entitlements.
- Approval of inter-catchment applications for trade.
- Developing rules and regulations applicable to trade of water use entitlements.
- Co-ordination of the rules and procedures of regional and local bodies.
- Allocating water entitlements.
- National water policy.
- Policy guidelines.
- Infrastructure development.
- Perform a role in dispute resolution.
- Issuing licenses for inter-catchment water transfers.
- Funding.
- Etc.

The general guideline should be that trading decisions should be taken at the lowest level possible, but the necessary checks and balances should be provided at the appropriate level.

- If a trade has an impact only on the members of WUA, after verification at the appropriate level then a WUA could provide a positive recommendation for approval by the CMA of the trade. This will for example be where the water before and after the trade is supplied by the infrastructure of the same WUA and it is only a matter of whether the infrastructure has the necessary capacity to provide the water according to the trade.
- Since a trade could affect parties other than the members of a WUA or the water resource, the CMA or DWAF must consider applications to trade.
- If the lowest level has no jurisdiction in respect of the effect, then the higher level that has jurisdiction must take the decision. For example if the effect of the trade is not limited to the user of water or area, but could also extend to adjoining landowners that do not use water from the water resource involved, the environment and other persons such as labourers. Persons that are not affected but who have an interest in the matter should also in certain cases be involved. An inter sector trade is more likely to involve such factors. Inter sector trade should be beneficial in the public interest. The socio-economic impact of the trade should be considered. The effect of the change in return flow should also be considered. The fact that the assurance of supply required by the different sectors involved may differ should also be taken into account.

It is proposed that trade between catchment areas should be allowed. Many of the projects under investigation consider the transfer of water from one

catchment to another. That is the only alternative available due to the fact that water is not available in the area and the compulsory licensing procedure will not be implemented in the near future in the area. This transfer of water from one catchment to another, constitute a trade. The traded water is abstracted in the one catchment and used in another catchment.

Impact assessments should be carried out to determine the impacts and how to address them. If the water is traded within the same CMA, then the CMA involved could possibly approve the trade. If the trade takes place between two water management areas, then it would not be inappropriate for DWAF to be involved in considering the trade based on the recommendations of both CMAs.

Enforcement should include ensuring that the waterworks that was used to exercise the water entitlement that is traded is removed if it is no longer required to exercise the traded water use entitlement

The NWA allows for appeals to the Water Tribunal against decisions regarding trade in water use entitlements.

There is provision for appeal to a High Court against a decision of the tribunal regarding issues of law.

#### **4.11. EVIDENCE OF THE FUNCTIONING OF THE MARKET IN SOUTH AFRICA UNDER THE NWA**

The NWA has not been functioning for a long time and it would be premature to evaluate its efficacy regarding trade in water use entitlements based on this evidence. There are however two aspects that can provide a preliminary view as to what is going on in the field.

Accordingly the number of permanent transactions that have taken place so far will be provided as well as a report on the experience of water users that have applied to trade entitlements.

What is not known is what the effect of these trades has been on the water resource and its management and on the availability of water that was not traded.

##### **4.11.1 Statistics**

The number of permanent transfers of water use entitlements since the NWA came into force. Are presented below;

| Year                 | Number of transactions |
|----------------------|------------------------|
| 1999                 | 323                    |
| 2000                 | 272                    |
| 2001                 | 203                    |
| 2002                 | 223                    |
| 2003 (to end of Aug) | 90                     |

Based on discussions with officials of DWAF it would appear as if a substantial number of once-off transactions occurred after the declaration in terms of Section 33 of the NWA came into effect. It allowed, that in particular cases, unused entitlements within a Government Water Scheme or an area under the control of a WUA can be recognised as existing lawful water use provided that these unused entitlements must be utilised within three years. Holders of these entitlements, who could not develop their properties, sold their water use entitlements rather than run the risk of losing it. The original three-year limit imposed on unused entitlements has since been withdrawn. The number of transactions that are recorded in the first year may nonetheless be artificially high due to this factor.

The amendment of Section 33 had the practical effect of increasing the allocations and increase the stress the catchments even more by giving people a right to water they could previously not use.

The largest number of transactions over the period 1999 to 2003 occurred in the Lower Sundays River, Lower Orange River, Middle Orange River, Orange River (Namaqualand) and Orange River (Vanderkloof).

It would appear as if the number of transactions has stabilised at about the level of about 200 per year. The number of transactions for 2003 represents only part of the year up to August.

#### 4.11.2 Experience of applications under Section 25(2)

The processes involved in the trade of water use entitlements have been explained from the point of view of DWAF. It would be useful to obtain the views from the applications on the efficiency and effectiveness of the present procedures.

The discussion below contain the views of one private organisation that deals with the formalities involved in applying for the trade in entitlements of water use mainly on behalf of farmers. The process involved is fairly similar in all regions.

More research is needed to conform or reject the views expressed.

#### 4.11.2.1 Introduction

The need to transfer water use entitlements originates from changed water needs by different water users in respect of a water source: while the one user wishes to reduce his water use, another may wish to increase. Once the water in a water resource which is available for allocation in terms of the licensing system, has been exhausted, a water user who wishes to increase his or her use, will have to search for a user who is willing to surrender his water use on a temporary or permanent basis. These parties will agree on the conditions of the transaction, after which application is done to the responsible authority in terms of Section 25 of the NWA for the transfer of the water use entitlement. Once the responsible authority has approved of the transfer, the users may accordingly continue with the amended uses, and will pay water use charges accordingly.

#### 4.11.2.2 Permanent transfers

An application for the permanent transfer of a water use entitlement is done in terms of Section 25(2), whereby the seller will surrender his or her water use, and the purchaser applies for a license in terms of Section 41.

In the majority of cases in the Inkomati WMA, the parties to the agreement appoint a lawyer to undertake the application on their behalf.

The process is as follows:

- Acquisition of Agro-Economic report on and recommendation for the transfer: the consultant or departmental official investigates both pieces of land and considers whether or not the transfer of the water use entitlement is an economically sensible step.
- Acquisition of a report from the Land Claims Commissioner, to state what the status of land claims in respect of the affected land is. Should there be a claim on the land, the owner of such land must indemnify the Minister of the Department of Water Affairs and Forestry against the results of the land restitution process.
- Acquisition of information from the Irrigation Board or WUA (if any) regarding the practical management implications of the proposed transfer, as well as the state of payment of Board/WUA accounts by the parties, as well as the Board's recommendation of the transfer.
- Acquisition of confirmation of all bondholders in the area in question, that they have no objection against the transfer.



- Completion of prescribed forms for the surrendering of the water use entitlement. The application for a license, together with all-supplementary forms and documents as may be applicable (e.g. authorisation in terms of regulations under Section 22 of the Environment Conservation Act (1989); power of attorney; company resolution, proof of ownership of the land, permission by the land owner, etc.)

Payment of license fees (R114, 00).

- The applications are then, together with supporting documents and reports and permissions, sent to the Regional Director, who investigates the transfer, verifies the water use entitlement (if necessary), and recommends its approval or refusal to the Chief Director: Water Use (CD:WU) (Part of the approval procedure is the determination of the Reserve. This determination can be time consuming)
- The CD:WU considers the applications and signs it, or refuses it, or approves it with conditions, which may include a need for the erection of measuring devices, a prohibition on abstracting in times of low flows, storage restrictions, etc. These conditions depend on the circumstances of each case.
- A license is issued to the purchaser with conditions, and sent to him. The Board is notified, and the schedule of rateable areas is accordingly amended.

#### 4.11.2.3 Time factor

Transfers take between two and eight months, depending on variables such as the effort to obtain the various recommendations, the management problems which must be addressed, verification or declaring a use to be an existing lawful water use (Section 33 of the NWA), and the bureaucratic procedures.

The process works relatively well in normal cases, but subject to the problems described under 4.11.2.4 hereunder.

#### 4.11.2.4 Challenges

In general, transfers are relatively sorted out under the NWA, and run smoothly. The most serious problems, which are currently experienced, include the need to verify, transfers between tributaries and main streams, transfers from above to below Government Waterworks and administrative bottlenecks.

a) Verification

The responsible authority (CD:WU) may verify a water use after the Regional Director had conducted an investigation into the lawfulness and extent of the water use.

A user who has not exercised his or her lawful water use entitlement in the qualifying period (referred to in Section 32), may apply to the CD:WU for a declaration under Section 33(1). The user may deem his use to be an existing lawful water use, as intended in Section 32(1)(a). The CD:WU may also issue such a declaration on his or her own initiative, in terms of Section 33(2). A declaration under Section 33 may not be issued unless the CD:WU has convinced himself of the lawfulness of the use.

Where a user has a lawful water use entitlement which has been scheduled under Section 62 or 88 of the Water Act 54 of 1956, which was not exercised in the qualifying period referred to in Section 32 of the NWA, but for which the required rates and charges which had been levied for by an Irrigation Board or the State, was paid by the user, such a use is regarded as an existing lawful water use under Section 33(2), and the user does not need to apply for its declaration as an existing lawful use under Section 33(1). The minister issued this general declaration in 1999.

Currently the Regional Director, would not recommend the issue of a license under a Section 25(2) process, unless a verification of the use had been done, to confirm the lawfulness or extent of the water use. In cases where there is no scheduling of entitlements in terms of Sections 62 or 88 of the Water Act 54 of 1956, i.e. where there was no irrigation board who listed the uses and levied rates and charges for it, this prerequisite is understandable. It is argued that within irrigation board districts, and in terms of the above-mentioned section 33(2) declaration, it must be accepted that these paid-up scheduled uses are lawful, and need not be verified. The Regional Director need not re-evaluate the lawfulness of a water use, which the CD:WU has already evaluated and confirmed.

However, this debate causes some delays, in that the Regional Director is of the intention to undertake a massive verification or compulsory licensing for the entire area, before recommending further transfers, especially in difficult or controversial cases.

#### b) Tributaries and waterworks

Under the Water Act 54 of 1956 the Minister was not empowered to allow the transfer of water use entitlements between different GWCAs. These GWCAs have now been abolished, and river systems or water resources are managed in an integrated manner, with the focus on the catchment. In practice, however, this concept is not as yet sorted out, and many practical management problems stand in the way of smooth transfers between tributaries and main streams, or from above to below dams. The main problem is the understanding of and effect on different levels of assurance of supply. These problems are, however, mainly of a control nature, in that different WUAs will probably oversee the control of abstraction on a single river system. Unless proper measuring and diversion works are in place, and unless the duties of the different WUA are streamlined, the passing of water through dams or from tributaries into the main stream cannot be controlled in a proper fashion. However, in time, mechanisms to facilitate river system management, will be put in place, which will be under the control of the CMAs. (This should include the measurement of all water use) Currently, DWAF is hesitant to allow such transfers, and the applications are time-consuming.

#### 4.11.2.5 Price

The majority of parties to transfers are from the agricultural and industrial sectors. As water resources are approaching their limits, and allocation by licensing can no longer be done, the demand on market increases and so does the price and the users who participate in trade.

Bate, et al (1999) studied water market trading in the Crocodile River Basin. They estimated the sale value of water between 18.75 c/m<sup>3</sup> and 22.75 c/m<sup>3</sup>. A wide range of trade prices (rental value) for water was observed ranging from zero to 6 cents/m<sup>3</sup> with a modal of 2.5 cents/m<sup>3</sup>.

Armitage, (1999) reported an average price (weighted asset value) for water trades in the Lower Orange of R3 378 per hectare (for 1997) or 22.5 c/m<sup>3</sup>. The water price varies from as little as R800/hectare to as high as R5 000/hectare.

Important to note is that water prices in the Lower Orange River have exhibited an upward trend. This could be attributed to the fact that there has been a reduction in the supply of water entitlements as all additional unused entitlements have been sold (Nieuwoudt, 2003).

There is also evidence that the unavailability of water in a catchment can hamper the trade in water rights.

In regard to the Crocodile River, (Nieuwoudt, 2004) indicates that a major challenge to water markets in this area is that buyers who are situated along this river below the gorge had significantly exceeded their water use entitlements.

Deacon (2003) also contends that the excess use of water without sufficient water rights is particularly a problem as below the gorge farmers simply expanded production even though they did not have equivalent entitlements to the water to support the expansion. As a result farmers far exceed their volumetric entitlements and accordingly puts the system under stress. However, other views stated by Comrie, (2004), are that the main issue is that the demand exceeds the supply in the system, especially during dry periods.

#### 4.11.2.6 Temporary transfers

These transfers are done in accordance with Section 25(1) of the NWA, where a user applies for permission to allow the water use entitlement to be used on another property in the same vicinity and for the same or another purpose.

The process is faster and simpler than that of a permanent transfer, and it is usually allowed if the WUA or Irrigation Board has no objection to the transfer. The decision-making power of the responsible authority has been delegated to the Regional Director of each region (Chief Engineer in the region). These transfers are seldom allowed for more than one year at a time, after which the parties must re-apply, and new conditions may be set by the Responsible Authority, depending on changed conditions. (A maximum of two years is allowed).

The user directs a letter to the Regional Director with the details of the properties and of the water use entitlements, as well as the recommendation of the Irrigation Board attached, and in simple cases, the authorisations are often signed within days. The Irrigation Board is notified of the permission, and the list of rateable areas is accordingly endorsed.

In practice the number of temporary transfers of water use entitlements takes place without formal procedures with agreement between parties. The delegation of this authority to WUA will ensure better administrative control.

## 4.12 SUMMARY

The main conclusions reached in this chapter are summarised below:

- 4.12.1 Trade in water use entitlements is taking place at present. Section 25(2) of the NWA allows for the trade in water use entitlements and Section 25(1) for the temporary transfer of water use for up to a period of two years. DWAF has issued procedures to implement such transfers.
- 4.12.2 The ease with which trade takes place is at present negatively influenced by amongst others, the need to verify existing lawful use, the required Reserve determination and where applicable the calculation of conversion ratios for trading between sectors. The position will improve after compulsory licensing.
- 4.12.3 It will take time before all existing lawful water uses are verified and licenses issued in terms of the compulsory licensing procedure. In the meantime trade of existing lawful water use will be the norm. The required reserve determination and the verification process can be time consuming. The complexity of issues involved in an application will amongst others be dependent on the hierarchical structure described in paragraph 5.3. The time taken and the associated transactions cost will vary accordingly. It is therefore envisaged that the ease with which markets will function will also follow this hierarchical pattern.
- 4.12.4 Trading especially within the agricultural sector will probably be easier than trading between sectors. Trade between agriculture and urban or industrial use may be more complicated due to factors such as the desire to maintain the agricultural water use base, differences in the assurance of supply and the complexity and greater weight that especially socio-economic factors will carry in inter-sectoral trade.
- 4.12.5 Trade in water use entitlements cannot take place without some form of regulation. The regulation is necessitated by the need to protect third parties such as for instance, other water users, beneficial use, correcting for past injustices and the protection of the water resource itself. Even after the present process of verification of existing lawful water use is completed and all applicable water use is authorised by a license, regulation will be still be needed. Every application for a trade in a water use entitlement will have to be checked against the Section 27 conditions. Depending on the individual case the evaluation procedure can be time consuming and costly.

- 4.12.6 The decentralisation of management structures such as, amongst others, CMA, WUA and other local bodies needs careful evaluation based requirements and ability to provide services. Their respective functions regarding trade in water use entitlements should be specified, based on the guidelines presented in paragraph 10. The role of DWAF can, subject to CMA capacity, change from the present active involvement in trade to that of a monitoring and regulating body.
- 4.12.7 The temporary trade of water use is at present allowable within the agricultural sector and takes place on a seasonal basis. The procedures needed for such trade is less cumbersome than that for the permanent trade in water use entitlements. There is a possibility that the demand for this kind of transaction will increase. If this should prove to be true a spot market (or rental market) can develop. Sophisticated structures have been developed in Australia to handle such cases. In the Australian case, short-term transactions are the more common type of transaction, because it does not involve all the administrative procedures that are required for permanent trade. It is also less time consuming and less costly.
- 4.12.8 Once local bodies are fully functional they will have to provide information regarding the availability of water entitlements for trade as well as short-term water use for rent.
- 4.12.9 Implicit in all these discussions is the assumption that the necessary expertise will be available to deal with the technical, legal and administrative demands that permanent trade in water use entitlements as well as the rental market will place on the structures. A shortage of human resources can delay the approval process and increase costs.

## **CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS**

Many of the aspects considered to be particularly relevant for a market in water use entitlements to function are spread over the previous four chapters. In this chapter the primary considerations will be presented in the form of conclusions. The conclusions are followed by recommendations that are proposed for the improvement in the way in which a water market functions in South Africa.

Each of the conclusions and recommendations is preceded by a brief motivation.

### **5.1. ECONOMIC ARGUMENTS**

The economic arguments that are considered relevant for purposes of this study are briefly summarized under the following two headings:

#### **5.1.1 Allocation aspects**

Water use is not a purely private good that can be reasonably left only to free market forces in order to achieve the optimal allocation of water use. It needs an amount of extra-market management to take social considerations into account.

Since water uses can to a large extent be interconnected, it will be necessary to consider the following factors:

- The rights to the use of water

A clear description of the good to be bought and sold and the conditions attached to its use is needed. If doubt exists about this aspect or if the water use entitlement is not free from dispute it will cause the trade of an entitlement to be more costly or in the extreme not possible at all.

- Externalities

A proposed transaction can affect users not directly involved. Procedures to internalize externalities, which would otherwise be ignored by water buyers and sellers negotiating in their own best interest, are needed. Such measures should narrow the gap between social and private net benefits of a proposed trade.

- Transaction cost

Two aspects related to transaction cost need to be stated namely, the

cost related to the physical and management infrastructure needed to trade and policy induced transaction costs (PITC). The PITC is the more relevant one in the present discussion. The magnitude of PITC can vary significantly and depends on the approval process and the pressure on water resources. These two factors are highly related, since the more pressure the water system is under, the more opposition is experienced, and the more rigorous the approval process.

In Colorado (Colby, 1990) over half of the transfer costs goes to pay legal fees to lawyers representing the applicant and the opposed party. If a considerable proportion of the transaction cost goes to engineers, hydrologists, lawyers and economists, in order to define water rights on a case-by-case basis, the efficiency of the process must be questioned. This fact strengthens the case for a well-defined water use entitlement. A careful distinction must therefore be made between transaction costs that serve to correct market failures, and the legal or administrative flaws in the transfer system that can add to transaction cost.

The time taken between application and approval of a proposed trade receives a lot of attention in the literature. It represents an opportunity cost of time foregone in the approval process and adds to the uncertainty. International evidence reports average times of over 2 years at the upper end to 4 to 5 months at the lower end of the time scale. From the limited local experience so far the average time taken in South Africa falls in the lower end of this time span. Approval times do however vary according to the complexity of the specific case and examples of individual cases taking more than two years have occurred.

### ***Conclusion 1***

*Based only on the international comparison of the time it takes to approve an application to trade it would appear as if the process is handled well.*

#### **5.1.2 Redistribution issues**

The market can be used to allocate water efficiently between competing uses. The market, left on its own, will not address redistribution issues. Specific policies need to be developed to deal with distribution issues since it cannot be directed via the market. Ways must be found in which previously disadvantaged individuals can gain access to water use are, for instance, through priority treatment in allocating surplus water. If no surplus water is available other interventions may be required to affect redistribution. Redistribution issues are addressed in the NWA. A detailed analysis of this aspect falls outside the scope of this study.



Redistribution considerations may however, impose restrictions on the way in which water markets are allowed to operate. For instance the trade of water use allocated to previous disadvantaged individuals may be prohibited or the ease of trading might be hindered if the economic opportunities of workers are negatively influenced by a proposed trade or inter spatial trade could be prohibited because of the effect on the development potential of the selling region.

#### **Conclusion 2a**

*Trade in water use entitlements will always need an element of regulation to protect third parties and deal with redistribution issues. A water market will therefore not function without the involvement of the government. Government involvement must be such that it does not cause transaction costs to become prohibitive.*

#### **Conclusion 2b**

*In particular situations redistribution considerations may put limits on the possibility of trade in water use entitlements.*

### **5.2. INSTITUTIONAL FRAMEWORK**

The purpose of the study was to determine whether the institutions exist for a formal water market to function. Institutions, in the context used here, refer to the rules as contained in the legal system, financial regulations and property rights needed to support the water market. If the rules are in place then administrative structures are needed to administer the rules.

Although the relationship between the institutional and administrative structures is a very close one, the institutional structure is a prerequisite without which a market cannot function.

The institutional rules that are needed are discussed in Chapter 2. It is summarized under the following headings:

- The right to the use of water, which entails a clear description of the conditions attached to the authorized uses of the water.
- Contracting mechanisms that specify the conditions under which an entitlement may be traded and how trade should take place.
- Facilitating rules that relate to;
  - the availability and access to information about trade possibilities and procedures,
  - The administration of water use and the enforcement of the conditions attached to specific entitlements.

Although the NWA does not specifically refer to a water market, the provisions facilitate such a market in the sense of providing for the required institutional requirements listed above.

Sections 25(1) and 25(2) specifically allow for the trade of an entitlement to the use of water.

The NWA also reflects the international trend towards a movement away from centralized administration and regulation accompanied by the bureaucratic allocation of water towards decentralized allocation and the use of economic instruments and user participation. The South African management structures and procedures as outlined in the NWA compares favourably with countries such, as among others, Chili, Australia and the western USA where water markets are part of the water allocation system.

The reality is however that the new approach does not start with a clean slate. The present institutions must be changed in an orderly way to achieve the objectives and specifications of the NWA. This process of change is not instantaneous or without numerous challenges. The NWA specifies the necessary transitional procedures and the NWRS outlines a strategy as to how and when the various objectives will be met.

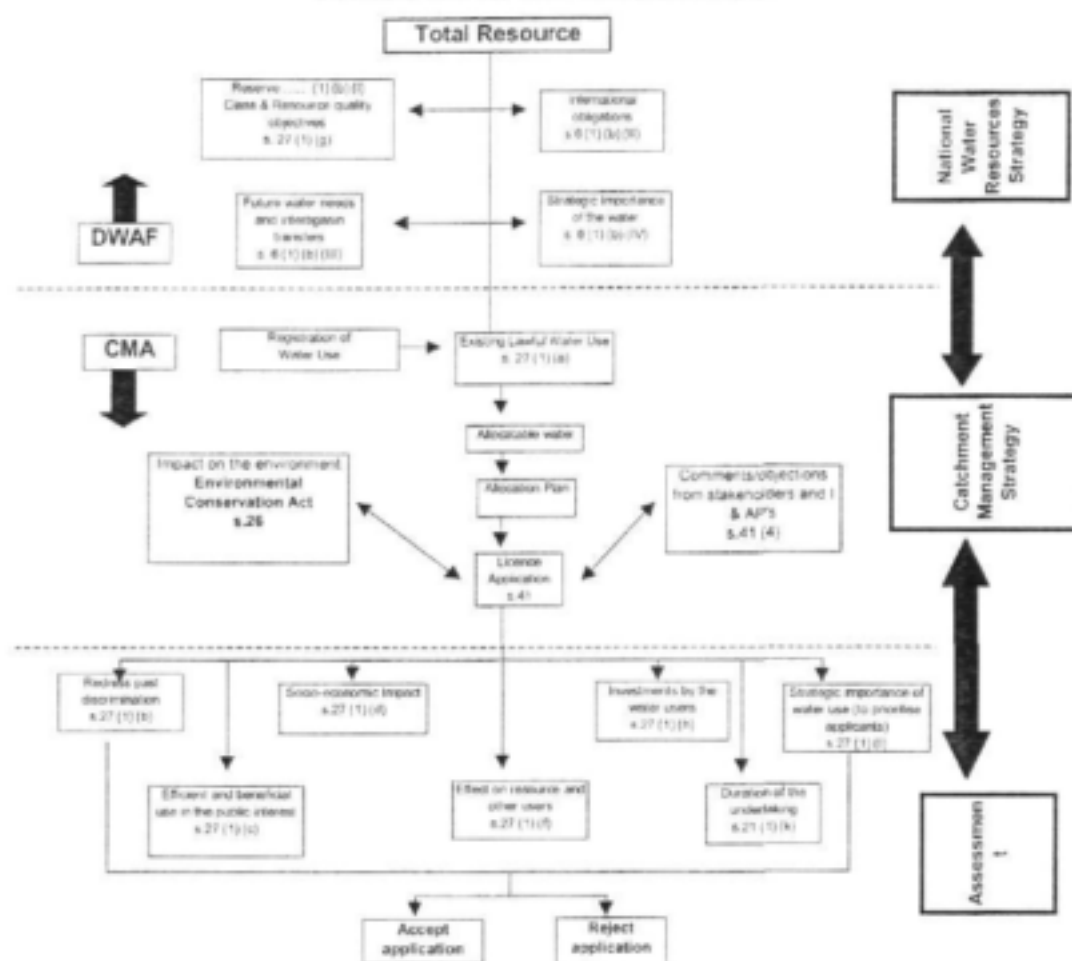
The way in which the provisions of the NWA is practically implemented in the case of an assessment of a license application can be summarised in Diagram 5.1 which is the same diagram that was discussed in detail in Chapter 4.

It indicates the various criteria as well as the overarching organizations involved in approving a license application. An application to trade, at present, also involves an application for a license.

The national criteria that must be put in place by DWAF namely the Reserve, class and quality objectives, future needs and inter basin transfers, international obligations and the parameters specifying the strategic importance of water are indicated. These criteria should be contained in the NWRS and disaggregated to catchments to provide a basis for the CMS.

As can be seen in Diagram 5.1 the CMA will deal with the aspects involved when considering applications for a water use license. The assessment of an application (whether new or for the trade of an existing lawful use) is done according to the requirements as stated in Section 27 of the NWA.

DIAGRAM 5.1: CRITERIA TO BE CONSIDERED FOR THE ASSESSMENT OF WATER USE LICENCES



Source: JC Perkins, Internal DWAF document.

### Conclusion 3

*The NWA provides a framework that can facilitate the trade of water use entitlements.*

Since the CMAs and CMSs are not in place the entire process outlined in Diagram 5.1 is managed by DWAF, which consists of a national office and regional offices.

In addition all the national criteria listed in the diagramme above are not yet in place. Interim measures such as for instance the provision for preliminary Reserves are used.

#### **Conclusion 4**

*All the structures and criteria are not yet in place and the assessment of applications to trade is managed centrally by DWAF. Until such a time as the CMAs are operational, applications to trade in water use entitlements will be approved centrally by DWAF involving the clusters and the regional offices for the preparatory work.*

### **5.3. PROVISION FOR THE PERMANENT TRADE OF A WATER USE ENTITLEMENT**

The existence of an entitlement that specifies the conditions attached to a specific entitlement to use water is the first consideration before a proposed trade can be considered.

All water uses (except schedule 1 and general authorizations) will eventually be authorized in a license. It will however take up to 20 years before this goal is reached.

In the meantime ad hoc verifications of individual water use authorizations can be done. One of the reasons for an ad hoc verification is to facilitate a transfer. Such a transfer can then occur under the provisions of Section 25(2).

An existing license is therefore not a prerequisite for a water market to function since a process has been introduced to deal with applications for a trade in an existing lawful water use.

#### **Conclusion 5**

*The trade in water use entitlements does not have to wait until a compulsory licensing procedure has been completed in a specific catchment. Provisions are made for the ad hoc verification of individual water use authorizations in order to facilitate a trade.*

### **5.4. EXPERIENCE WITH PERMANENT TRADE IN WATER USE ENTITLEMENTS UNDER THE NWA**

#### **5.4.1 Procedure followed by the buyer to get approval of a proposed trade**

A procedure that an application to trade a water use entitlement must follow has been worked out in collaboration with DWAF officials.

- 5.4.1.1 An application is made whereby the seller will surrender the water use and the buyer applies for a license in terms of Section 41 consisting of the completion of prescribed forms for the surrender of a water use and application for a license.

Supporting documents needed:

- An Agro-economic report that indicates whether the proposed trade is a sensible one
- Report from Land Claims Commissioner specifying the status of land claims in respect of the affected land.
- WUA recommendation of proposed transfer based on practical management implications of transfer and the state of payments of WUA accounts.
- Confirmation that all bondholders in the area have no objection.

Supplementary documents such, as authorization in terms of Section 22 of Environmental Conservation Act (1989), proof of ownership etc.

- 5.4.1.2 The application is referred to the Regional Director who investigates the transfer in terms of the assessment process outlined in Diagram 5.1. The detail regarding the assessment procedures is contained in Appendix 5. The verification of the lawful use of the water is part of the assessment of water use entitlement.

- 5.4.1.3 The Regional Director makes a recommendation to the Head Office of DWAF and specifically to the CD:WU who after satisfying himself that all the provisions of the NWU have been addressed approves or refuses or approves the trade with conditions that are considered appropriate.

#### 5.4.2 Number of transactions

A substantial number of applications to trade water have taken place since the NWU came into force. The number of transactions in 1999 was 323 and since then it slowly declined to 223 in 2002 and for 2003 up to August only 90 cases were approved. No information is available about the number of applications not approved.

## **Conclusion 6**

*A Large number of applications for the permanent trade of water use entitlements have successfully taken place under the NWU.*

### **5.5. THE CHALLENGES FACED BY TRADE IN WATER USE ENTITLEMENTS**

A preliminary evaluation of issues encountered relates to three aspects:

- The newness of the system and the so-called teething problems encountered. Once all the criteria to approve an application for a license to use water are in place permanent trade in water use entitlements will become more of a routine matter than at present.
- The inevitable scarceness of knowledge and expertise to deal with the required administrative procedures, and
- The need to protect society, the water source, the environment and other users.

The discussions in the next paragraphs and the recommendations are all related to these three fundamental considerations.

#### **5.5.1 Unintended effects of trade in water use entitlements**

##### **5.5.1.1 Dormant entitlement issue**

The provision that unused water use entitlements are considered an existing lawful use under specific circumstances, but must be activated within a certain time span or can be lost (Section 33), lead to an increase in entitlements offered for sale within GWCAs and areas under the control of irrigation boards. The transactions originated from holders of dormant entitlements that could not be activated in the specified time. Rather than risk losing the entitlement it was offered for sale. Effectively this activation of dormant entitlements increased the water demand from a given resource. In areas under stress this activation leads to adverse effects on all other existing users.

##### **5.5.1.2 Concentration**

Economic efficiency requires that a scarce resource should be used where its marginal productivity is the highest but it can have negative social effects. A case in point is the pressure on small farmers to sell to large undertakings that can afford to pay high prices for water.

Large owners have an incentive especially in stressed areas to buy more entitlements to ensure a higher degree of water supply assurance. A case in point is the irrigation farmers on the Orange River that buys out entitlements, provided from the Orange River to the Sundays River area, because water can be used much more productively by for instance the table grape growers along the Orange River. This more efficient use of water does not take into account the threat to the economic development in the Eastern Cape that will result if this transfer is allowed.

#### 5.5.1.3 Socio-economic and distribution impact of trade

High prices for water use entitlements provide an incentive to emerging farmers to sell their water use entitlements. The underlying reason for selling the entitlements may be that other factors prevent the farming enterprise from becoming viable. The selling of water entitlements is an easy way to generate cash. In such cases strategic interventions may be necessary and it may be a case for inter-departmental cooperation between the Department of Agriculture and DWAF to ensure that small-scale agriculture can become viable.

Section 27 does provide a mechanism for considering social issues when an application to trade is considered. (See also Appendixes 4 and 5). It does however require consistent and strict application of the criteria to evaluate private benefits and negative social costs. Where the cost, which includes social cost, outweigh the benefits a transaction should not be allowed.

#### 5.5.2 Restrictions to trade

The effect of restrictions on the trade in water use entitlements has been analysed extensively in the international literature (Garrido & Rassenti, 2003). The most common restriction on the trade of water use entitlements is that of prohibiting the trade of water to an area or use outside a specific area. Examples in the case of the western USA and Australia are referred to in Chapter 2. In South Africa the NWRS states that transfers, whether temporary or permanent, will only be permitted where both the original and transferred water uses are from the same water resource. In addition the extent to which water use may be traded in terms of quantity and quality across water use sectors must be considered as well as defined before trading can be permitted. (Paragraph 4.4).

The sensitivity of allowing the transfer of water outside the source can be ascribed to, amongst others, the cost to operate a water scheme. After the trade, to a user outside the area, the total cost of running the scheme will be distributed amongst fewer users and therefore increase the burden on them.

This is also partially the reason for the cautionary approach towards allowing unrestricted trade between sectors. An additional factor is a desire to maintain the agricultural water use base.

The case for putting such, a priori, restrictions on trade can be based on justifiable considerations. Alternatively, rather than putting a priori restriction on trade, an impact study can be requested to indicate the extent of the effect of the proposed trade and the possible mitigating measures. If the effects are of such a nature that the negative effect on third parties can be mitigated, then it should become part of the cost of the transaction. The route of the impact study seems to be the more prudent approach from an economic point of view than the outright, a priori, prohibition.

#### ***Recommendation 1***

*Unease about the unintended consequences of trade does not mean that it must be prohibited or discouraged. A proper impact study to evaluate all the private and social cost and benefits of a proposed trade should guide a decision on a proposed trade.*

#### ***Recommendation 2***

*Concern about socio-economic issues does not negate the need to trade to increase more efficient water use. It does mean that ways have to be found to evaluate these social factors properly.*

#### ***Recommendation 3***

*To the extent that issues related to the redistribution of water use to previously disadvantaged individuals are concerned it is maintained that this is not just a matter for only DWAF. For this purpose a broader inter-departmental policy framework is needed.*

### **5.6. ADMINISTRATIVE ISSUES**

#### **5.6.1 Present situation**

There is at present a perception that the time it takes to deal with an application has increased. This can be due, in some instances, to a lack of administrative capacity and the availability of the necessary expertise of hydrological, legal, economic aspects related to an application at the regional offices and therefore a tendency to refer matters to head office.



Factors that can result in slower decision making at the central level in turn could be due to the fact that the so-called national criteria are not yet fully in place or problems encountered to assess the existing lawful use. The time it takes to complete an application is directly related to the complexity of a specific case as indicated by the hierarchical structure (outlined in paragraph 4.6).

The approval process will also be slowed down as the scarcity of a specific water source increases. In such cases the third party effects will be much more prominent and require a more careful evaluation of the impact of the proposed trade.

The impression obtained so far is that notwithstanding the relative slowness, the present procedure for dealing with applications is satisfactory. It can also reasonably be expected that as the national criteria fall in place and as the assessment procedures becomes institutionalised the handling of applications will become a more routine matter.

#### **5.6.2 Decentralised administrative procedures**

A decentralised administrative structure for dealing with applications for a license is proposed in the NWA and outlined in Diagram 5.1 has many advantages not least of which is the opportunity it allows for local participation as well as the consideration of region specific issues.

A decentralised administrative structure can however be more expensive and very demanding with, amongst others, its demand on available expertise that includes technical, and management skills, which may not yet be readily available in a developing country such as South Africa.

Eventually there will be eighteen CMAs each with its own administrative structure as well as the technical support staff to deal with the regional issues including applications to trade water use entitlements.

Doubt can be expressed as to whether a decentralised system will in the foreseeable future have the capacity of providing the expertise needed to approve applications for trade.

Although the broad functions of the CMAs are outlined in the NWA the detail must still be worked out. Issues such as whether the governing board of the CMAs will consist of members serving on a voluntary part time basis and the level of expertise on water management issues expected from its members are critical. There is uncertainty as to whether the CMA will draw the required expertise if the members are not full time or at least well remunerated. The adequacy of funding for each of the 18 CMA infrastructures is also not clear since it is dependent on abstraction fees and also waste management fees. Waste management fees have received little

attention so far although it could be the dominant source of funding in urban and industrialised areas.

It may be that experience might cause a rethink on the role of CMAs with regard to trade in water use entitlements.

The CMA will form a closer link with local community and local closer conditions. This positive feature must be weighed up against the probability of weaker regional administrative capacity.

It might be that the positive elements of the CMAs could be maintained if their functions are adjusted somewhat towards that of an integrating body that must co-ordinate the various environmental and planning concerns in the catchment area and serve as an information facilitating body. This will leave the process of applications to trade under the central administration.

#### ***Recommendation 4***

*The present central approval process works well and has the advantage that the necessary expertise is concentrated at the centre and is available to all applications to trade. Whether a decentralised approval process can be embarked on depends on the availability of expertise and the financial viability of the decentralised structure.*

#### ***Recommendation 5***

*It might be necessary to carefully evaluate the role of the CMAs and their capacity to deal with trade applications before delegating this function.*

At present the lack of capacity in the regions have been realised and partly in response to this fact the regional offices have been restructured into four clusters. Each cluster will provide the technical expertise to the area it is designated to serve.

**TABLE 5.1: ADMINISTRATIVE CLUSTERS**

| Cluster | Headquarters       | Area covered                                        |
|---------|--------------------|-----------------------------------------------------|
| South   | King Williams Town | Eastern Cape & Western Cape                         |
| East    | Durban             | Natal & Mpumalanga                                  |
| Limpopo | Polokwane          | Limpopo, Olifants and Polokwane                     |
| Central | Pretoria           | Orange River, Northern Cape, Gauteng and North West |

Most probably this will also be an interim arrangement depending on how views about the role and functions of the CMAs unfold in the future.

The success of the cluster system will depend on the creation of adequate capacity before they will be able to operate efficiently.

### **5.6.3 Alternative model for an administrative structure to deal with water trade**

Will an alternative administrative structure, such as for instance a dedicated central privatised division that can pool the necessary skills needed to deal with trade in water use entitlements, lead to a more efficient system?

The answer lies partially in whether the number of transactions warrants it as well as the extent to which the long-term vision of the water management structure enfolds.

It must also be admitted that at present the issue of trade in water use entitlements is probably one of the smaller issues regarding the change over from the old to the new approach to water management.

Suggestions about alternative structures will therefore at present be premature.

Whether one would proceed on the way towards decentralising the decision on water trade applications or keep the more centralised model that is used at present depends on the availability of technical and managerial expertise and whether a decentralised system will turn out to be affordable.

Should it prove in the end that a centralised system is considered more effective one can look at various alternative administrative arrangements (such as for instance a dedicated privatised division) that can function more efficiently.

### ***Recommendation 6***

*The administration of and decision-making on trade in water use entitlements and whether it can be decentralised depends critically on the available human resources. Strategies should be developed to increase the pool of expertise available on all the aspects of water resource management.*

The human resource issue can be extended to the private sector where there is a scarcity of market intermediaries and consultants

## 5.7. IMPEDIMENTS TO TRADE

At present the number of transactions is relatively small. This is reflected in the available statistics that indicates a declining number of permanent trade transactions. This could be because there is little need for trade or it can be due to other circumstances. It would be useful to investigate specifically from the point of view of potential buyers and sellers what they perceive the impeding factors to be. This aspect is not investigated in the South African case but has received attention internationally. Some of the common impediments are restrictions placed on trade between regions, between different user groups, physical constraints and Policy Induced Transfer Costs (PITCs). An important impediment referred to by Brown, (1982) is the level of proficiency required. Although this reference is a bit old it is most probably very appropriate in the present day South Africa. Under proficiency factors the existence of experienced market intermediaries and consultants, ease of administrative procedures and flow of market information are listed. A study on the Australian situation reveals similar impediments (Bjornlund, 2002).

### *Recommendation 7*

*This study should be complemented with a more detailed investigation of the impediments to trade as experienced by the perspective of buyers and sellers.*

## 5.8 TEMPORARY TRANSFERS OF WATER USE (THE RENTAL MARKET)

Temporary trade is much less regulated because of its short term nature.

Section 25(1) allows for the temporary transfer of water use. The power to approve such transactions has been transferred to the regions (and now to clusters). It needs to be noted that even in the case of temporary transfers the verification of the lawfulness of the water use must be determined.

Frequent temporary transfers take place. It is not sure to what extend a formal procedure is followed. In the past the Irrigation Boards handled this function but the WUA has not officially been delegated to deal with the temporary transfers.

In Australia temporary transfers of water use have become a major marketing activity. The popularity of this market led to large short-term water market exchanges. The popularity of this form of trade depends on the certainty of access to water use that is needed. Short-term transfers are much more common in the case of annual cash crops. In the case of long-term

agricultural enterprises such as fruit and vineyards the need for certainty of water supplies may count against short-term transfers.

#### **Recommendation 8**

*The present short-term transfers need to be better organised at the local level and should include a notice board to advertise and report on transactions. This information can also be distributed electronically.*

Knowledge of what the new approach to water management entails is not well known by potential participants in the market. Buyers and sellers and intermediaries acting on their behalf would like a set of general guidelines that would indicate in broad terms what factors are taken into account in rejecting or approving an application to trade. This information is already available as can be seen from the procedures contained in Appendix 4 and 5 respectively. It could perhaps be restated in a more user-friendly way.

An issue related to the provision of information regarding trade is that of a register of permanent transactions at the central level as well as a register of short-term transfers at the local level. Ideally such records should include prices and terms under which the trade took place.

#### **Recommendation 9**

*The potential participants in the market do not have sufficient knowledge about the new approach outlined in the NWA to water management. Information should be made available. The possibilities of permanent and temporary trade, the process involved as well as the assessment criteria for a license application should become common knowledge. Information about transactions and the prices realised should become known for the market to function efficiently. The general availability of information contained in the central register of permanent water use transactions as well as the local records of temporary transactions should be accessible.*

### **5.9. EVALUATION OF THE INSTITUTIONAL FACTORS PROVIDED TO FACILITATE A WATER MARKET**

Since institutional factors are the central theme of this project it is fitting to conclude with a brief evaluation of the extent to which the institutional requirements for a water market have been met. All four categories of the institutional prerequisites discussed in Chapter 2 are provided for, at least in principle. It may not function optimally at present because all the building blocks are not in place.

As discussed,

- Provision is made for the description of entitlements in the form of a license. It will however be a long time before all the applicable water uses are licensed. In the mean time an ad hoc procedure for application to license water use have been created.
- A mechanism has been created whereby temporary and permanent trade in water use entitlements can be dealt with under Section 25 (1) and 25 (2).
- Provision is made for the enforcement of the conditions of use attached to the authorisations.
- Information on all trade possibilities and the rules and procedures involved can still be improved.
- The administration of all the various processes is not yet fully in place and the need for expertise to manage the new water management system can be demanding.

The extent to which the water market is not working as smoothly as intended can be partially ascribed to the newness of the system, the fact that all the required criteria and the fact that all the required administrative structures are not yet in place.

The development of the water market will in future depend on the requirements of the participants and the degree to which those requirements can be complied with given the inherent characteristics of the nature of water.

## 5.10 SUGGESTIONS FOR FUTURE RESEARCH

Many of the possibilities for future research follow directly from the recommendations listed in the previous paragraphs. Most of these issues discussed under recommendations require further investigation. These topics will not be repeated here.

The approach of this study is primarily informed by the need to determine whether the necessary institutions and organisations have been created by the NWA and implemented by DWAF to facilitate a formal water market.

As a result this study has not placed sufficient emphasis on the demand side in the sense that the problems encountered by the buyers and sellers of water use entitlements do not get the attention they deserve.

At the same time it must be stated that the conditions in the various catchments in the country differ from one another. This is due to, amongst others, different levels of water scarcity, use patterns and different levels and kinds of infrastructure in the various catchments. It would therefor be realistic to expect that the issues confronted by buyers and sellers will also differ.

Follow-up studies on this topic should adopt a more regional approach to isolate the common but also the region specific issues. It would be more sensible to come up with regional specific operational criteria for trade.

The analysis of the administrative procedures created to facilitate trade would have been more meaningful if all the structures and criteria were in place. The water management system of the country is however in a transitional phase where the provisions of the NWA are in the process of being implemented. Many of the administrative structures must still be established and some of the procedures for dealing with the trade in water use entitlements are not fully developed. The experience elsewhere at the operational level, may therefore be a useful topic for further investigation in the immediate future.





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## *APPENDICES*

Appendix 1 Draft Wanneroo Trading Rules.

Appendix 2 Legal aspects.

Appendix 3 A list of reasons why an application for trade in a water use entitlement can be unsuccessful.

Appendix 4 Indicators and checklist for assessment of water use license applications in terms of the National Water Act, No 36, of 1998.

Appendix 5 Evaluation form for assessing an application to license a water use.

Appendix 6 Capacity building relating specifically to the project on the facilitation of trade in water use entitlements by the National Water Act, in South Africa.

## *APPENDIX 1: DRAFT WANNEROO TRADING RULES*

The Water and Rivers commission and the Wanneroo Groundwater Advisory Committee prepared these rules:

1. License allocations may be sold.
2. License allocations may be leased for a period of two years or more.
3. Only license allocations from the superficial aquifer may be sold or leased.
4. Every sale or lease shall be entirely contained in a single sub-area.
5. Sale and lease of licenses is permitted only in the Carabooda sub-area.
6. Licenses shall only be issued to people who own, occupy or have written permission to occupy the land on which the water is to be drawn and used.
7. Licenses shall only be issued to people who own, occupy or have written permission to occupy the land on which the water is to be drawn and used.
8. The Commission may require the applicant to show that the change will not damage the aquifer or the environment.
9. The applicant must obtain the consent of all people with an interest in the license for the sale or lease.
10. The Commission may refuse the application to sell or lease an allocation.
11. The Commission will approve the sale or lease only if the applicant agree in writing to the license conditions.
12. If the Commission refuses an application or the applicants do not agree to the draft license, the applicants may appeal to the Minister.
13. The application fee for the sale of allocation will be \$100 plus \$10 per thousand kilolitres of allocation to be transferred.
14. The application fee for the lease of allocation will be \$100 plus \$1 per thousand kilolitres of allocation to be leased.
15. New licenses resulting from a trade shall be issued only after any necessary stamp duty has been paid.
16. Any portion of the license allocation that has never been used must be surrendered before any part of the license allocation can be transferred.

17. Any portion of a license allocation that has never been used will not be renewed when the license expires, unless the Advisory committee recommends otherwise.
18. The Commission may order a license holder to sell or lease any allocation that has not been used during the past two years.
19. Where there is nobody prepared to pay a fair price, the licensee may retain the allocation no longer in use.
20. Any portion of a license allocation that has not been used in the past five years will not be renewed when the license expired, unless the Advisory committee recommends otherwise.
21. The license holder may appeal to the Minister against a refusal to renew a license allocation or any order to sell or lease the allocation.
22. The domestic allocation cannot be sold.
23. In the Carabooda sub-area, the developer shall provide the domestic allocation for lots approved for subdivision after 1 April 1999.
24. Landowners in special rural zones may buy or lease license allocations only if the proposed use complies with the planning requirements.
25. Traded allocations shall be metered if this is necessary to monitor the use of groundwater.
26. A change in total allocation, resulting from a re-evaluation of safe yield, shall be made by a pro-rata change in the allocation or another method specified in the allocation plan.
27. Domestic allocations will not be changed as a result of a re-evaluation of safe yield.
28. License holders will be advised of their new allocation and must advise the Commission, within 90 days, how the change in their allocation is to be put into effect.

**APPENDIX 2:      *LEGAL ASPECTS RELEVANT TO A MARKET***  
***by Adv. H. Thompson***

The water resource management institutional framework was replaced in 1997 with a new, which the State is now busy implementing. The White Paper on a National Water Policy for South Africa of April 1997 and the National Water Act No. 36 of 1998 as amended form the basis for the new framework. The legal basis of the previous framework was the repealed Water Act No. 54 of 1956.

The purpose of this appendix, as an input to that project, is to set out the legal aspects relating to the market mechanism. It includes also the issue of separating rights to use water from land and what that implies with respect to tradability of rights and the confiscation of rights.

This document is drafted with the practical experience and knowledge of the author on the matter. Some of the statements in this document are therefore not necessarily based on research on the matter or contained in documents.

**A MARKET TO TRADE RIGHTS IN WATER**

Experience has shown that certain legal and other requirements facilitate an effective market in the rights to use water. A water market works best where there is a need to market the water, institutional restraints are as such that bargaining and negotiating regarding the rights and obligations in respect to the right could take place without unnecessary interference and there is trust between the parties involved. Even if the law allows trading, but some of the institutional requirements are not in place, then an effective market will probably not come into operation. (Johnson: 7 to 10, 30, 36, 37 and 42, Solanes: 10 to 18, Clark: 5 to 12, Backeberg: 364 and 365 & Water Research Commission, 1999a: 25, 26, 27 & 30).

A water market could come into existence due to various modes, such as selling, leasing, exchanging, tendering and auctioning the property water (in most cases only a right to use water), even if the water does not belong to a specific user. Collectively these are called trading rights to use water. It could be a separate deal, part of a deal to trade an undertaking or piece of land or a deal where an undertaking or land is bought with the rights to use water and thereafter the undertaking or land is disposed of without the rights to use water. In this document only the issues concerning a market relating to the separate deal is set out.

As the procedures could vary for the different modes to trade as well as from water resource to water resource, from area to area or from district to district, the different modes and the procedure for each mode as well as how to transfer the rights should be clear, justifiable and applicable. It should also be clear under what conditions a specific mode of trade could take place or could not or should not take place.

A market for rights should be distinguished from other transfers of rights that are not due to a market to trade. These are for example where a person authorised to use water for a certain purpose is allowed to use that water for another purpose on the same piece of land or elsewhere, or is allowed to use the water for the same purpose but on another piece of land.<sup>1</sup> Modes like pooling, banking, exchange, reuse, salvage and the provision of water should also be distinguished from a market to trade water. However, many of the rules applicable to a market are also applicable to these other modes of dealing with rights to use water and transfers of rights.

## FUNDAMENTAL LEGAL PRINCIPLE UNDERLYING THE INSTITUTIONAL FRAMEWORK

Although jurists have different opinions on this matter, it seems that most have the opinion that the fundamental legal principle that underlies water resource management, which includes rights to water, has its roots in the Roman law. According to this principle all natural flowing and running water are *res omnium communes*. This water belongs to no one in particular but to all and that those in need thereof could obtain rights to use it, with the responsibility of the State to allocate and regulate these rights in the public interest.

It is submitted that these principles have been applied in South Africa since 1652. However, the need for water, the location and capabilities of the water resources, the technological available to use water, the competitiveness of the usage and the institutional and political framework applicable at a certain time have dictated how these principles were applied during a specific period. This created the impression that various water legal systems were applicable during different periods in South Africa. These different systems are in essence only a manner to implement the *res omnium communes* principle during a specific period, depending on the political arrangement at that stage, the technology available to use water, the intensity of the competition for the usage and the need for water. If during a certain period water was allocated to a certain category of people for usage, then it does not mean that that allocation mechanism should apply forever. If the circumstances that prevailed when the allocation was made changed, then the allocation mechanism could be amended or repealed.

<sup>1</sup> In terms of section 25(1) of the National Water Act of 1998, a water management institution may allow a person who is authorised to use water for irrigation to use some or all of that water for a different purpose, or to allow the use of some or all of that water on another property in the same vicinity for the same or a similar purpose. This could only be allowed on a temporary basis and on such conditions as the water management institution may determine. If necessary, formal application should be made in terms of section 50(1) to amend or substitute the licence conditions. There is an appeal to the Water Tribunal against the decision of a water management institution on the temporary transfer of a water use authorisation by a person affected thereby.



## LEGAL ASPECTS RELATED TO A MARKET

### Rights to be traded

The person who wants to trade a right must own or have a vested right in the water or the right to use water. A person cannot transfer to another person more rights than he or she owns although he or she may transfer fewer rights. The right to be traded need not be ownership of water itself, but could only be a right to use the water. The legal status of the original right and the legal status of the traded right should be the same, except if certain of the attributes have been retained by the original owner.

### Security of rights

Water rights to be traded must be secure and certain in their fundamental attributes. The amount and source of the water as well as the other defining attributes must be known and free from dispute. If these are not known and free from dispute, then a person who wants to acquire such a right may not be willing to risk capital or other resources in relation to that right. This could result in that potentially beneficial water trades might fail to come into fruition.

Water rights should therefore be definable in terms of a unit of measurement (volume or rate of flow for a set period),<sup>2</sup> reliability and priority of the right. It should be defined in readily understood and measurable terms so that there is transparency in what is being transferred and what attributes the right entails.

### Severability of rights from land

If the right to use water is tied to a particular piece of land, then it must be possible to sever that right from the land and transfer the use to another piece of land or to a specific person separate from that piece of land.

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<sup>2</sup> Rights could be reconciled with either proportional or prior principles. Proportional water rights are defined as a percentage of the water flow available in any given year for all the users in a system. While the percentage remains constant, the actual quantity of water received varies according to the available flow. Individual users receive a specified volume of water according to their individual legal water right allocation, subject to water availability and allowing for proportional sharing of water shortages. The homogeneity of proportional rights makes market organisation easier, however, users must hold more rights to reach a level of assurance of water supply due to supply variability. This approach is more flexible and equitable in allocating deficits than the prior appropriation system, providing equal sharing of shortages. In some cases, certain priority uses such as municipal supplies are reduced less, or not at all, while other uses such as agricultural or industrial uses have their deliveries reduced the most. The priorities will be reliant on the critical water use sectors. Historical information on the probability that certain quantities of water flow will be available at different times of the year, as well as the capacity to store water will improve market efficiency by reducing uncertainty. The prior appropriation doctrine on the other hand gives first priority to the older, most senior water rights with lower priority to rights established at a later point in time. During times of drought only senior water rights holders receive water, while in times of surplus flow the junior rights holders could also receive water, depending on the availability of the water. The priority system permits a user to buy varying degrees of water supply reliability. However, the heterogeneous nature of the rights, due to varying priority of rights, makes it harder to organise the market. The priority system is thus characterised by a high level of market organisation, requiring comprehensive transfer proceedings and regulations (Water Research Commission, 1999a p 30, 31 and 32).

If the right to use water is tied to a particular person, then it must be possible to transfer that use to another person.

### **Protection of third parties' rights**

Trading of rights has the potential to harm other persons and the environment. If the use of water is traded from one purpose to another, for example from irrigation to industrial use or urban or from one area to another, there could be a significant difference in the return flows to the water resource and in certain cases even to another water resource than the resource from where the water was obtained.<sup>3</sup> Further, the assurance of supply and the efficiency of the application of the water could also be different. The impact on the quality of the water in the water resource could for the different type of water uses also be different.

Measures should therefore be in place to determine the potential harm of the trade so that conditions could be placed on the traded use to ensure that the use will not be harmful to other water users and the environment. The quantity and quality of the water available in the water resource after a trade should not be less or poorer than it was before the trade.

### **Modes and procedures of trades**

The law should be clear on the circumstances under which trades may be permitted and under what circumstances it may not be permitted as well as whether it should be temporary or permanent. The procedures for each mode of trade should specify the conditions subject to which a trade may take place or may not take place, the factors to be considered before a trade should be granted and whether there is any appeal to the trade or not.

In complex cases, a public notice of the intent to trade and regulatory approval by a judicial, legislative or administrative authority should be a requirement before a trade may take place. On the other hand, if there is no possibility of harm to other persons or the environment, then intervention by authorities should be limited. For example, if a trade takes place between two land owners where both are supplied with water from a canal under the control of a water authority, then the only intervention should be by this authority to ensure that the canal has the necessary capacity to supply the water and that third parties' land will not become waterlogged due to the trade.

### **Transaction costs**

Transaction costs are often of such a substantial amount that they could prevent a trade from happening. These costs should be clear to all the parties concerned. The transaction cost involved in the trade could be the cost to identify a potential buyer

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<sup>3</sup> These flows are sources of the water resources and the water from that is allocated to other water users.

or seller, the technical, legal and economical investigation costs, the actual cost to trade the right (the revenue of the trade), the costs to conclude and enforce the contract and the application fee and the cost to give legal effect and register the trade. From the transaction costs, the cost to exercise the right should be distinguished.

### **Registry of rights**

If a registry is maintained in which legally sanctioned rights to water as well as the defining attributes are accurately catalogued, it will facilitate the trading of rights, as rights are, depending on and subject to the status of the registry, at least certain in their fundamental attributes, even if they are not secured. As trades occur, the registry should be updated.

A register could also be maintained of potential buyers and sellers of rights.

### **Availability of information**

Hydrological, climate, in-stream water requirements, soil, crop water requirements, water application efficiencies and other information are needed to determine the potential harm to third parties and the environment so as to minimise these. This is especially the case if the place where the water is to be taken after the trade differs from the place where the water is taken. This information should be comprehensive, accurate and readily available.

### **Compliance with other policy and legal requirements**

Trading of rights should only be allowed if it complies with the requirements of other policies and laws than those dealing with water, such as environment, health and socio-economic issues.

### **Trading not to be allowed due to public policy requirements**

Under certain circumstances public policy requirements should prohibit the trading of rights. For example, in certain countries trading of rights to use water, where the water is derived from a governmental scheme, are only allowed under limited circumstances, for example it may not be traded for a profit or to land other than land within the original project area.<sup>4</sup>

A person who for example has obtained a right to use water without paying any consideration for that or where the right is not capitalised in the land or undertaking, should probably not be allowed to trade that right separately from the land or

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<sup>4</sup> These policy requirements have often been criticised as impeding the efficient and socially desirable allocation of water.

undertaking with the view to gain financial benefit from that trading. The same should apply to a person who has obtained a right for basic needs. Trading of such rights should probably be prohibited.

### **Institutional requirements**

A water market functions best where an effective institutional framework is in place. The framework should include the necessary organisational structures to determine the different attributes of the rights and enforcing them. Further some degree of infrastructure, such as canals and storage dams, should be in place to allow easy delivery of the water to the buyer. Flexible infrastructure enables sellers to transfer water at a reasonable cost to buyers. For this reason water trades tend to take place within existing distribution systems and use sectors. However, the absence of such infrastructure does not preclude the development of a water market, as any improvements to the infrastructure to supply the water to the buyer is part of the cost of the trade.

### **Types of water uses to be traded**

It is possible to trade one type of water use for another. For example, the water use "taking of water from a water resource" may be traded for a use "stream flow reduction activity". The legal framework for trading a specific water use from one person to another and for one type of water use for another type of water use are the same, although the procedure for the second is much more complex. As this project deals only with the trading of the water use "taking of water" the trading of one type of water use for another is not discussed in this document. However, the lessons learned from this project could also be applied to those trades and the lessons learned from those trades could also be applied to this project.

## **HISTORICAL PERSPECTIVE**

During the research for this document it was found that the practice applied is that water provided to an irrigator by a water services provider is considered a water use and that Section 25(2) of the NWA is applicable when the use of that water is traded. (Informal discussions with some officials of the DWAF and Water Research Commission, 1999a: 112, 118 to 122).<sup>5</sup> It is submitted that this is wrong, as water obtained from a canal of a water services provider is not a water use and could therefore not be traded as a water use. It should be an internal arrangement with the water services provider to trade the water from one member to another member.

<sup>5</sup> During the discussions no consensus could be reached on the matter. One of answers of an official is that the approach in this document is probably too narrow, as the water in anyway comes from a water resource and is for that reason a water use, and a wider approach should therefore be followed. The contents of this document are based on how the registration of water uses took place during 2000 and 2001. Where a water user association abstracts water from a river and provides it to irrigators with canals, the abstracting of all the water by that association was registered as a water use, while the receiving of the water from the canal was not registered. The matter has not been taken up further, and depending on the methodology and study areas of this project, there could be need for this.

However, if the trade takes place to a non-member of the services provider and the water will not be supplied by the water services provider, then that is a trade of a water use, but a trade between the water services provider and the non-member. To be able to understand this better, it is necessary to analyse some of the principles of the repealed Water Act of 1956.

### **Legal framework as contained in the Water Act of 1956**

The provision of the Water Act 54 of 1956 dealing with the right to use water was based on the following two cornerstones:

- The first was the distinction between two categories of water, namely private and public water. In addition, public water consisted of normal flow and surplus water. The rights to use water in each of these categories were determined differently.
- The second is that the rights to use water from a public stream were determined differently in areas declared government water control areas than from areas not declared as such.

Many problems were experienced in interpreting and applying these principles. It was for example in certain cases difficult to determine whether a specific river was a private stream, a public stream or a source of a public stream. The status of the river was important, as the rights to the water were determined according to the status of the river.<sup>6</sup> Although the law sets out the rights, it was in many cases not definable in terms of unit of measurement, reliability and priority of right.

### **Areas not declared government water control areas**

#### **Framework to use water**

In an area not declared a government water control area, all the owners of riparian land shared proportionally the normal flow of a river (based on the irrigable area on each land and the available water) for irrigation and urban purposes while the upper owner had a preferential right to the surplus water for irrigation and urban purposes. The usage of this water was subject to certain conditions and obligations. (This is known as the riparian principle.)

A person needed the permission of the water court if the person wanted to use-

- more public water than the person was entitled to;
- public water on non-riparian land or on land that did not qualify for the usage of public water; or
- public water for other purposes than for agricultural or urban

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<sup>6</sup> See for example *Du Toit and others v Krige NO and others*, unreported case by the Cape Water Court dated 22/10/1971, *Le Roux v Kruger* 1986(1) and the *Minister of Water Affairs v Riparian owners along the Sheerpoort River*, unreported case by the Transvaal Water Court dated 17 March 1994.

purposes.

The water court could have allocated the water from a public stream in the following manners:

- Where the water was not or would not have been used, for example where all the riparian owners had not developed their land or where there was more water available than the riparian owners could have used. The water court could then have allowed a person to abstract permanently or temporarily water for agricultural, industrial or urban purposes. The court could have imposed conditions for example to prevent downstream owners from being prejudicially affected. No compensation to any person was payable.
- Where the granting of permission would have reduced the rights of other persons and it was in the public interest.<sup>7</sup> Before the water court could grant permission, it determined in what manner and to what extent the rights of the other persons would have been reduced when making the water available. The water court could then permit a person to abstract water for any purposes. The water court could impose conditions as it deemed desirable. The water court could also order the payment of compensation to a person whose rights had been reduced and the court determined the amount payable.

If permission was granted to a person to use the water and the water was not used within five years from the date of granting such permission, then the permission lapsed.

The owners of the land on which private water was found, had the sole and exclusive use and enjoyment of that water. However, a person could only have conveyed the water over the boundary of a property on the authority of a permit from the Minister or person to whom the Minister had delegated this power.

#### Framework to trade rights

Direct and indirect trading of rights could have taken place. Direct trading usually took place by way of agreements. Indirect trading usually took place by way of an application to the water court which granted rights and made an order that compensation be paid to those whose rights were reduced. As no real framework was in place and the law did not prohibit trading, combinations and alternatives of these were applied in practice. Some mining companies and industrialists for example bought land with the rights to use water and thereafter the land was disposed of (usually by selling) without any rights to use water registered against the title deeds. If the mining company or industrialist wanted to use the water on non-riparian property, then the permission of the water court had to be obtained for that.

<sup>7</sup> Public interest meant beneficial to the public or the State. See *O'Boyle Copper Co Ltd v Union Govt* 1961, Vos's Reports 302. In *SA Industrial Cellulose Corp v Umkomaas Town Board* 1960, Vos's Reports 264, it was decided that although certain features of the proposed undertaking approximated a nuisance, the public interest was not confined to a locality but related to the public at large.

One of the problems was how to make the trading agreements applicable to third parties. Registration of the agreements against the title deeds were sometime used, but the various Registrars of Deeds were not in favour of this practice. If registration was not possible, then, in the case of public water, the permission of the Water Court had to be obtained.<sup>8</sup> In the case of a trade with private water, a permit by the Minister had to be obtained.

Trading of rights in areas not declared government water control areas could always take place, but due to the high transaction costs and legal uncertainty of the procedure, these were usually restricted to where the traded water was used for a higher-value use than the original application. No register existed for these trades. Further, in areas where the water resources were not under stress, or even in areas where the water resources were under stress but there was no effective institutional framework to enforce rights, persons abstracted water that they were not entitled to without any authorisation or trading. Obviously, as the framework came in place for a certain area, these practices were curtailed or steps were taken to curtail it, although not always with success.

#### **Areas declared government water control areas**

It was under certain circumstances necessary to allocate the rights to use water in certain areas differently from the principles as discussed in above. For that reason, the Minister could by notice in the *Government Gazette* have declared government water control areas. This could have been done for two reasons and the same area could have been declared for both reasons.

The rights to the use of private water were not affected in government water control areas.

#### **Where no government waterworks were involved - Framework to use water**

A government water control area could have been declared if the abstraction, utilization, supply or distribution of the public water should have been controlled in the public interest. The area could also have included non-riparian land. Water was not supplied from a government waterworks to the area, and even if there was such a works, water for the area was not reserved in the works.<sup>9</sup> The irrigators or an organisation to which the irrigators belonged, for example an irrigation board, could have constructed works to distribute the water to the different irrigators.

The rights to the use and the control of water in the public streams within these areas vested in the Minister of Water Affairs and Forestry. A person was not

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<sup>8</sup> In the case of a trade between a riparian and non-riparian owner, the permission of the water court was always a legal requirement. In practice this did not always occur.

<sup>9</sup> A certain volume of compensation water could have been released to the irrigators.



entitled to abstract water or use it on land inside or outside the area except by virtue of a provisional right, a permission (there were three types) or an allocation.

#### Where no government waterworks were involved - Framework to trade rights

The rights allocated to a property or a person within a government water control area could only have been used on any other property or by any other person with the permission of the Minister or person to whom the Minister had delegated this power. Although the law allowed trading, it was not the policy of the State to allow trading of rights to take place. Further, in many of the areas final rights were not determined and provisional rights were allocated in some cases<sup>10</sup> to all the pieces of land in the area arbitrarily without considering the actual irrigable area and water available on each specific piece of land. Allowing trading of these provisional rights would have established a wrong perception of the value of water, especially if a right was traded from a tributary with a small run-off to a tributary with a large run-off. Therefore, if a person needed water, an application for the use of the water was usually made to DWAF. The reason for the need and whether there was water available for the need or not was then considered and if approved, then a permission was issued to use the water for a certain period.

Trading of rights therefore hardly occurred, and if so, then only for certain restricted reasons and on a temporary basis.

#### Where government waterworks were involved - Framework to use water

A government water control area could have been declared where the area is supplied with water from a government waterworks. The water could have been allocated for any purpose on a temporary basis or for irrigation on a permanent basis. The water could have been supplied and distributed by way of canals or by way of releases into the river where each person abstracted his or her right to the water.

As far as provision of water for irrigation was concerned, the area which could have been irrigated for each piece of land was determined in accordance with a formula on a non-discriminatory basis. No consideration was paid for this right but the irrigators had to pay a fee for the provision of the water, even if no water was used. The list reflecting the area that could have been irrigated was reviewed annually.

In respect of each piece of land, an area that could have been additionally irrigated could also have been determined. For this additional area a once off consideration was paid to the State. The irrigators had to pay a fee for the provision of the water, even if no water was used.

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<sup>10</sup> For example in areas declared government water control areas for the purpose of protecting the run-off of water to a major dam.



#### Where government waterworks were involved - Framework to trade rights

The rights allocated to a property or to a person could only have been used on another property or by another person with the permission of the Minister or person to whom the Minister had delegated this power. Although the law allowed trading of rights to use water subject to the approval of the Minister, no trading actively occurred prior to 1994 because of (Water Research Commission, 1995 & 1999a: 53)

- institutional failures stemming from the lack of private decision-making powers over water management and water transfer issues;
- high transaction cost arising from common property problems of riparian rights to water and stringent legislative requirements for water transfers by DWAF;
- water rights that were linked to land ownership or use through riparian rights to water; and
- preference for judicial and bureaucratic allocations of water rights that were retained by DWAF.

It was only considered as a real policy option as from about 1993 to transfer rights temporarily (lease) and permanently (sale) under delegated authority.

Various permanent transfers were recorded in some areas irrespective of whether the water was supplied and distributed by canals or released into the river to be abstracted by each irrigator.

#### Subterranean water - Framework to use water

A subterranean government water control area could have been declared if the abstraction, utilization, supply or distribution of the subterranean water in the area should have been controlled in the public interest.

The rights to the use and the control of all the subterranean water within these areas vested in the Minister. A person was not entitled to abstract any quantity of the water or use it on any land except by virtue of a provisional right, a permission (there were three types) or an allocation.

#### Subterranean water - Framework to trade rights

A person could only have conveyed subterranean water over the boundary of a property with the authority of a permit from the Minister or person to whom the Minister had delegated this power. Although the law allowed trading of rights to use water subject to the approval of the Minister, it was not the policy of the State to allow trading of rights to take place. Trading of rights therefore hardly occurred, and if so, then only under exceptional circumstances.

## Control over the use of water by irrigation boards - Framework to control the abstraction of water

An irrigation board could have been established for a specific area, irrespective of whether the area was declared a government water control area or not, or whether a government waterworks was involved or not. The functions and duties of the boards varied, depending on the situation applicable to a specific board, and included among others the following:

- The prevention of any unlawful abstraction or storage of water or the removing of any obstruction unlawfully placed in a stream.
- The exercising of general supervision over a public stream and the regulating of the flow of a stream.
- The investigation and recording of the quantity or share of water which every person with rights was entitled to use and the times at which such quantity or share could have been taken.
- The supervision and the regulation of the distribution and use of the water in a stream.
- The acquirement and maintenance of waterworks.

An irrigation board had no power to alter or abate the rights to water. The board did not determine any rights to water but only noted its view on the rights. The rights were determined as set out above. The rights were managed by means of a schedule which indicated the extent of the land to be irrigated by each owner.

Some irrigation boards owned waterworks and others did not. Some irrigation boards provided water with canals to the irrigators and others did not. In certain cases the irrigators abstracted the water from the rivers and in other cases they did not. Some irrigation boards had only supervision and advisory responsibility. In certain cases the water was supplied by irrigation boards under the jurisdiction of another irrigation board or by the State. Therefore various possibilities existed.

## Control over the use of water by irrigation boards - Framework to control the trading of rights

The framework to control the use of water by irrigation boards resulted in that there were various possibilities to trade rights to use water. Some of the possibilities are:

- An irrigation board could have existed for example for an area that was not declared a government water control area. Irrespective of how the water was provided, regulated or controlled, transfer of rights was allowed with the permission of the board and if non-riparian property was involved, also the water court. One or other form of trading did take place, depending on the local circumstances.

- An irrigation board could have existed for example for an area that was declared a government water control area. Irrespective of how the water was provided, regulated or controlled, the transfer of rights was allowed with both the permission of the Minister of Water Affairs and Forestry and the board. Only as from 1993 trading of rights were allowed and took place, in some areas more than in other.

## **FUNDAMENTAL RIGHTS**

### **The application of the Bill of Rights**

The Bill of Rights is the cornerstone of the new democracy of South Africa. It enshrines the rights of all people and affirms the democratic values of human dignity, equality and freedom. These rights are not absolute and may be limited by legislation, if it is reasonable and justifiable in an open and democratic society based on human dignity, equality and freedom.

#### **Right to equality**

Section 9 of the Constitution grants two rights to equality, firstly, a right to equal protection and benefit of the law and secondly a right to non-discrimination. Equality includes the full and equal enjoyment of all rights. However to promote the achievement of equality, legislative and other measures designed to advance persons disadvantaged by unfair discrimination may be taken. This right means more than similarity of treatment. The law and conducts should ensure equality of outcome. If the provision of the law or conduct does not differentiate between people or categories of people, then the law or conduct in question does not violate the right to equality. If the provision of the law or conduct differentiates between people or categories of people, then it has to be determined whether the law or conduct has a rational basis. This should be done by determining whether there is a rational connection between the differentiation and a legitimate governmental purpose.

#### **Right to protection of property**

##### **Constitutional requirements**

A person may not in terms of Section 25 be deprived of property except in terms of the law of general application and no law may permit arbitrary deprivation of property. Property may be expropriated only in terms of the law of general application for a public purpose or in the public interest and subject to payment of compensation. The amount of compensation payable and the time and manner of payment should be as agreed to by those affected or decided or approved by a court.

The scope of the property clause is determined by the meaning of the word "property". "Property" is a word with such a wide variety of meanings that it is

almost impossible to define it accurately or exhaustively. The courts will probably be guided by the existing ambit of the law of property when interpreting the term "property". Property should therefore be something recognised as property in the existing law, which has the meaning "property as rights".<sup>11</sup> Therefore the property clause protects more than the right of ownership and more than simply ownership of corporeal things. Further, property is not limited to land. Property in terms of the property clause encompasses at least real rights recognised by the law of property, such as ownership in land, lease, servitudes and mineral rights.<sup>12</sup> It also encompasses at least some of the rights making up what is termed "bundle of rights" that constitutes ownership - the right to use a thing, to exclude others from it, to receive income from it and to transfer it to others. There would be little point to the constitutional protection of property if the State could interfere at will with the component rights of ownership provided it left a shell of bare dominium in the hands of the owner.

Does property for the purposes of the property clause include those rights that have economic value and are referred to as property but are not real rights? There is a great deal of foreign authority suggesting that the definition of property for the purpose of constitutional protection should not be restricted to real rights<sup>13</sup>, the reason being that in modern economic life, physical property in general lost their status as defining attributes of wealth. Wealth is not dependent or restricted to ownership of land or other physical assets. A great deal of private wealth consists of personal rights, shares, pension benefits, public welfare entitlements, policies and the like. Included in this should also be the right to use *res omnium communes*, such as water.

Therefore restricting the constitutional definition of property to real rights would leave a great deal, if not most, of the people's assets unprotected for confiscation by the State. It is submitted that "property" for the purpose of Section 25 should be seen as those resources that are generally taken to constitute a person's wealth and that are recognised and protected by the law. Included should be any type of right to water and to use water.

#### The distinction between deprivation and expropriation

Section 25 distinguishes between "deprivation" and "expropriation" of property. Deprivation of property by the State is permissible provided that it is not arbitrary and is carried out in terms of a law of general application. A person has no right to compensation if he or she is deprived of property. However, if property has been

<sup>11</sup> See A J Van der Walt *Constitutional Property Clauses* (1999) 349 to 353 "property" means "rights in property that are demonstrably vested in the claimant and that have some patrimonial value".

<sup>12</sup> See for example *Attorney-General of Lesotho v Swissborough Diamond Mines (Pty) Ltd* 1997 (8) BCLR 1122 (Lesotho CA) where the court had no difficulty in considering registered mining leases to be property protected by the property right of the Lesotho Human Rights Act.

<sup>13</sup> The most voluminous body of jurisdiction is that of the United States of America. Their courts have interpreted property to include a number of rights with an important economic value which are traditionally not conceived as property. These are for example a right to a driving licence, tenure in employment or high school education. See Matthew Chaskalson "The Problem with Property: Thoughts on the Constitutional Protection of Property in the United States and the Commonwealth" (1993) 9 SAJHR 388.

expropriated by the State, a person has a right to monetary compensation for the property that has been taken.

In *Harksen v Lane NO*<sup>14</sup> the Constitutional Court indicated that expropriation for the purpose of the property protection clause in the Bill of Rights means the compulsory acquisition of rights in property by a public authority. Compulsory acquisition means compelled by law, as opposed to a voluntary alienation of rights. Expropriation also requires an appropriation of the rights by the expropriator. Expropriation is therefore the complete removal of an established property right and requires compensation.

Deprivation, on the other hand, is the dispossession of a right in property which does not involve the acquisition of the right by the dispossessing authority. It is therefore merely the limitation of the extent of use of property and does not require compensation, for example zoning requirements under a town planning scheme that limit the uses of a piece of land. Deprivation therefore involves an exercising of the State's regulatory powers over property. A mere interference with property rights by the State will not constitute expropriation. The State's power to deprive people of property is not restricted by the obligation to pay compensation for the deprivation even if the deprivation results in economic loss for the owner of the property.<sup>15</sup>

The difference between expropriation and deprivation is that expropriation occurs where the State takes away (a right in) property and either keeps it for itself or transfers it to someone else. On the other hand deprivation occurs where the State leaves property in private hands but imposes restrictions on the use of the property. The restrictions could go so far as to constitute an effective extinction of the property rights, as long as the rights are merely extinguished and are not acquired.

#### Measures to achieve water reform

Constitutional protection of property does not impede the State to effect water-related reform by taking legislative and other measures in order to achieve socio-economic equity (address the result of past discrimination). If the reform entails the expropriation of property, then compensation must be paid for that, except if it is "reasonable and justifiable in an open and democratic society based on human dignity, equality and freedom."

#### Right to access to information

Everyone has in terms of Section 32 the right of access to-

<sup>14</sup> 1998 (1) SA 300 (CC) para 32.

<sup>15</sup> See for example *Government of Malaysia v Selangor Pilot Association* [1978] AC 337 (PC) where legislation prohibited private companies or individuals from operating pilot services in state-owned harbours. The effect of the legislation was to wipe out the goodwill accumulated over many years by a private association which had, prior to the passage of the legislation, run a pilot business. According to the majority of the court, the loss of goodwill did not amount to a compulsory acquisition of property without payment of compensation. The goodwill was extinguished by the legislation and was not transferred to, taken over or acquired by the public authorities.

- any information held by the State; and
- any information held by another person and that is required for the exercise or protection of any rights.

The Promotion of Access to Information Act 2 of 2000 was enacted to give effect to these rights. The Act provides a framework for a right to requests for records of public bodies and private bodies and a concomitant duty to provide the information requested, unless there is a ground for refusing access to the information.

### **Right to just administrative action**

Everyone has in terms of Section 33 the right to administrative action that is lawful, reasonable and procedurally fair. Further, everyone whose rights have been adversely affected by an administrative action has the right to be given written reasons. National legislation must be enacted to give effect to these rights, and must-

- provide for the review of administrative action by a court or, where appropriate, an independent and impartial tribunal;
- impose a duty on the State to give effect to the rights; and
- promote an efficient administration.

The Promotion of Administrative Justice Act 3 of 2000 gives effect to these rights. The Act provides a legislative basis for the review of certain classes of administrative action and sets out the procedures to be followed by administrators before certain decisions or rules could be made.

## **POLICY GUIDELINES**

### **Fundamental principles**

Due to the democratic changes in South Africa, the demand of the Constitution and because the water legislation was inadequate to meet the anticipated water demands, a process to review all the water related legislation was initiated in 1994. The "Fundamental Principles and Objectives for a New Water Law in South Africa" that were approved by the Cabinet in November 1996 formed the basis for this review. The principles applicable to trading of rights to use water are as follows:

#### **Legal aspects of water**

##### **Principle 2**

All water, wherever it occurs in the water cycle, is a resource common to all, the

use of which shall be subject to national control. All water shall have a consistent status in law, irrespective of where it occurs.

#### Principle 3

There shall be no ownership of water but only a right (for environmental and basic human needs) or an authorisation for its use. Any authorisation to use water in terms of the water law shall not be in perpetuity.

#### Principle 4

The location of the water resource in relation to land shall not confer preferential rights to usage. The riparian principle shall not apply.

#### Water resource management approaches

#### Principle 12

The National Government is the custodian of the Nation's water resources, as an indivisible national asset. Guided by its duty to promote the public trust, the National Government has ultimate responsibility for, and authority over, water resource management, the equitable allocation and usage of water and the transfer of water between catchments and international water matters.

#### Principle 13

As custodian of the Nation's water resources, the National Government shall ensure that the development, apportionment, management and use of those resources are carried out using the criteria of public interest, sustainability, equity and efficiency of use in a manner which reflects its public trust obligations and the value of water to society while ensuring that basic domestic needs, the requirements of the environment and international obligations are met.

What is the status of these principles? These principles have no legal binding. The effect thereof is that-

- it is not necessary to take the principles into account when amending the National Water Policy or NWA; and
- it is not necessary to take the principles into account while implementing the National Water Policy or applying the NWA.

It is therefore not possible to object to a court of law if the national water policy, the NWA or any amendments to that do not or no longer comply with these principles. It is submitted that these principles should play the same role as any other document plays in interpreting the policy or Act.



## NATIONAL WATER POLICY

According to the White Paper on a National Water Policy for South Africa, all water in the water cycle whether on land, underground or in surface channels, falling on, flowing through or infiltrating between such systems, will be treated as part of the common resource to the extent required to meet the broad objectives of water resource management (DWAF, 1997: 3 & 14). A legal framework for allocating the water must be set up to achieve the "best possible use" of water. This concept involves more than productive use of water since it explicitly provides for weighing up of social, economic and environmental objectives by the regulators to achieve equity, efficiency and sustainability (DWAF, 1997: 12-13). Water use allocations claimed under the Water Act of 1956 may be recognised if these are beneficially used in the public interest. Further, preference will be given to basic human needs and to the protection of ecosystems, which are called the Reserve, and to international obligations. This will be done in a way which will ensure that no avoidable or unnecessary damage is done to regional economies or groups such as irrigation farmers (DWAF, 1997: 15, 16 & 17). The riparian system of allocation, in which the right to use water is tied to the ownership of land along rivers, will effectively be abolished. Transitional arrangements will over time ensure an orderly, efficient and gradual shift in water use allocations as and when necessary (DWAF, 1997: 4).

Water allocations will no longer be permanent, but will be granted for a five year cycle with a maximum length of forty years. Applications will be considered subject to a number of conditions. Where new applications compete with existing uses, the guideline for government authorities will be the above-mentioned criteria of "best possible use." Further all water users will eventually have to apply for the registration of their water use and these uses will, where possible and justified, be converted into licences. This will be done in sequence of priority areas. Areas under water stress will generally be considered first. (DWAF, 1997: 4 & 17-18).

The policies for water resource protection, conservation and allocation have all identified that there is a possible role for economic measures such as water resource charges to support the policies proposed. While the approach to price setting has some limitations, the trading in water-use allocations as a price setting mechanism also has its limitations and is by no means free from administrative burdens. (DWAF, 1997: 21 & 22).

However, provision may be made to allow trading in water-use allocations in limited areas. If introduced, these will be subject to varying degrees of control depending on whether it is within a single-user sector or between different sectors and whether it is between water management areas. Particular attention will be given to evaluating whether equity objectives and fair resource allocations are achieved. (DWAF, 1997: 18 & 23).



## LEGAL FRAMEWORK IN TERMS OF THE NWA

### Regulating the use of water

What is a water use?

A water use is in terms of Section 21 among others the following activities:

- taking water from a water resource; and
- storing water.

A water resource means in terms of Section 1 a watercourse, surface water, estuary and aquifer. A watercourse means-

- a river or spring;
- a natural channel in which water flows regularly or intermittently;
- a wetland, lake or dam into which, or from which, water flows; and
- any collection of water which the Minister may, by notice in the *Government Gazette*, declare to be a watercourse.

A water resource is therefore not a canal which is used to supply water to a user. To say the Minister could declare the canal a watercourse is farfetched.

The activity applicable to this project is not "using water (for irrigation)", but "taking water from a water resource." A person may in terms of Section 22(1) only use water (in this case "taking water from a water resource") if it is authorised.

Therefore, a person who receives water from a canal owned by a water services provider is not undertaking a water use. The "taking of the water from a water resource" by a water services provider to distribute it to the irrigators is a water use and should therefore be regulated as such. The receiving of the water and the using of the water are not a water use and could therefore not be regulated as such. It should be regulated in terms of the conditions for provision of water services of the water services provider. If the services provider is a water user association, then it should be contained in the association's constitution and if the water is provided from government waterworks, then it should be contained in the rules applicable to provision of water from that works.

## Authorising the use of water

A responsible authority is responsible for authorising and regulating the use of water. A responsible authority is the Minister of Water Affairs and Forestry, except if the Minister has assigned the power to a specific catchment management agency<sup>10</sup>, and if so, then the catchment management agency is the responsible authority for that power for that area.

The Minister may in terms of Section 23 determine the quantity of water in respect of which a responsible authority may issue general authorisations and licences from the water resources in the area concerned.

A person may in terms of Section 22(1) only use water if that water use is-

- permissible under Schedule 1 to the Act;
- permissible as a continuation of an existing lawful water use in terms of Section 32;
- permissible in terms of a general authorisation;
- authorised by an individual licence; or
- authorised by licence issuing due to a process to issue compulsory licences.

Therefore, if an envisaged water use is not allowed under Schedule 1, does not fall within the scope of an existing lawful water use or an issued general authorisation, then a licence is required for that use. Further, if a general authorisation is revoked or has lapsed without issuing a new general authorisation and a person using water authorised by that general authorisation wants to carry on with that use, then that person must obtain the necessary licence for that.

In terms of Section 22(2)(a) a person who uses water may only do that subject to any condition of the relevant authorisation for that use. The use is further in terms of Section 22(2)(b) subject to any limitation, restriction or prohibition in terms of the Act or any other applicable law.

The water may in terms of Section 22(2)(d) and (e), not be wasted and any seepage and run-off which emanates from that use must be returned to the water resource from which the water was taken, unless the responsible authority in writing directs otherwise or the relevant authorisation provides otherwise.

The Minister of Water Affairs and Forestry may in terms of Section 26(1) require that a water use must be registered with a responsible authority. These regulations

<sup>10</sup> South Africa is divided into 19 water management areas. The idea is to establish in terms of section 78 a catchment management agency for each of these areas. The purpose of establishing the agencies is to delegate water resource management to catchment level and to involve the water users in the management of the water resources in that area. In areas where a catchment management agency has not been established, the Department of Water Affairs and Forestry acts as the catchment management agency for that area. Catchment management agencies have certain original powers, of which developing and implementing the catchment management strategy are the most important ones. Powers and duties could also be assigned or delegated to a specific catchment management agency, depending on the capacity and the water-related problems experienced in an area.

have been issued and a process has been started to register existing lawful water uses and a new water use may not commence unless it is registered.

#### Authorising the use of water - Schedule 1

Schedule 1 sets out those water uses that a person may engage in without any authorisation. It represents the minimum use that could be allowed without being regulated by a formal authorisation. Only Parliament may amend these rights by amending the Act.

#### Authorising the use of water - Existing lawful water use

A water use is in terms of Section 32 an existing lawful water use if it complies with the following criteria:

- the use must actually have taken place any time during the period 1 October 1996 to 30 September 1998;<sup>17</sup> and
- the use must have been authorised by or under any law which was in force when the NWA commenced.

A responsible authority may declare a water use to be an existing lawful water use if that water use-

- took place before 1 October 1996 and was discontinued for a good reason; or
- had not yet taken place before 30 September 1998 but would have been lawful had it taken place and steps towards affecting the use had been taken in good faith before 30 September 1998.

A person, or that person's successor-in-title, may in terms of Section 34 continue with an existing lawful water use. This must be done subject to any existing conditions or obligations attached to that use or any other limitation or prohibition by or under the Act. The person may carry on with the existing lawful water use until a licence replaces the use.

A responsible authority may in terms of Section 35 require a person to apply for a verification of a water use. The responsible authority may determine the extent and lawfulness of a water use.

#### Authorising the use of water - General authorisations

A responsible authority may in terms of Section 39(1) by notice in the *Government Gazette* authorise all or any category of persons to use water subject to certain conditions either:

- generally;

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<sup>17</sup> The period of two years immediately before the Act commenced.

- in relation to a specific water resource; or
- within an area specified in the notice.

A water use authorised by a general authorisation may be carried out until the general authorisation lapses or is repealed.

General authorisations should be used to set cut-off points above those mentioned in Schedule 1. Water uses below these cut-off points and above those in Schedule 1 will then be allowed to take place without obtaining any authorisation for that, provided that the person using that water complies with the requirements of the general authorisation. Water uses above the set cut-off points should only take place if authorised by way of a licence, except if the use is an existing lawful water use. The cut-offs should be set by taking into consideration the capabilities of the water resources, the extent of the competition between the persons using the water and those that want to use the water, the water resource objectives to be met, the institutional framework and the organisational capacities.

#### Authorising the use of water - Individual and compulsory licences

A person who wants to use water which is not an existing lawful water use, authorised in terms of a general authorisation or permissible under Schedule 1, needs to apply to the relevant responsible authority for a licence for that use. The use of water could be authorised in two ways by way of a licence. The first is due to an application for an individual licence and the second due to an application for a licence as part of the compulsory application process.

If no general invitation to apply for licences has been issued in terms of section 43 as part of the compulsory licence process, then the person who wants to use water must in terms of Section 40<sup>18</sup> make an application for an individual licence. But, if a general invitation has been issued, then the person who wants to use water must make an application for a licence as part of that process. However, nothing prohibits a person from still applying for an individual licence. It is for the responsible authority to decide whether it is in the public interest to issue an individual licence while the compulsory licence process is applied.

A compulsory licence process is followed in those cases where among others the water resources are under stress due to severe competition between the water users and potential water users while the water resource capabilities are limited or the aim is to achieve equity in allocation. This process allows the achievement of fair allocation of water from a water resource, promoting the beneficial use of water in the public interest and facilitating efficient management of the water resources.

After providing for the Reserve<sup>19</sup> and international obligations, the basis for granting a licence to use the water available will be to achieve beneficial use in the public

<sup>18</sup> Section 40 states that a person may apply for a licence to a responsible authority to use water. Nowhere in the Act is a responsible authority authorised to issue an individual licence. In practice it is considered that a responsible authority has this power.

<sup>19</sup> The water that is necessary to satisfy basic human needs and to protect the aquatic ecosystems.

interest which will include consideration of the need for programmes of corrective action.

Licences will be granted for a period of time appropriate to the particular use. Long-term crops and industrial uses that involve substantial infrastructure investments with long time horizons will be given longer-term licences than cash crops. To facilitate the process of allocation and review, licences will be granted on a five year cycle, with a maximum length of forty years. A licence remains in force in terms of Section 28(3) until the end of the licence period, when it expires, although the licence could in terms of Section 54 be suspended or withdrawn if there is non-compliance with the conditions of the licence.

### **Factors to be taken into account before issuing general authorisations and licences**

In issuing a general authorisation or licence a responsible authority must in terms of Section 27(1) take into account among others the following factors:<sup>20</sup>

- existing lawful water uses;
- the need to redress the results of past racial and gender discrimination;
- efficient and beneficial use of water in the public interest;
- the socio-economic impact of the water use or uses if authorised and of the failure to authorise the water use or uses;
- the likely effect of the water use to be authorised on the water resource and on other water users;
- investments already made and to be made by the water user in respect of the water use in question;
- the strategic importance of the water use to be authorised; and
- the probable duration of any undertaking for which a water use is to be authorised.

### **Attaching conditions to authorised water uses**

A responsible authority may in terms of Section 29 attach among others the following conditions to a licence or general authorisation-

- relating to the protection of the water resource in question;
- relating to water management by specifying management practices and general requirements for any water use, including water conservation measures and requiring the preparation and approval of and adherence to, a water management plan;
- setting out the specific quantity of water or percentage of flow which

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<sup>20</sup> These factors are important when contemplating the prioritisation of a particular application and when establishing preferences when evaluating competing applications for specific water uses.

- may be taken;
- setting out the rate of abstraction;
- specifying the place from where water may be taken;
- specifying the times when water may be taken;
- identifying or limiting the area of land on which any water taken from a resource may be used;
- which are necessary or desirable to achieve the purpose for which the licence was issued; and
- in the case of a licence-
  - specifying times when water may or may not be used;
  - containing provisions for its termination if an authorised use of water is not implemented or not fully implemented;
  - designating water for future or contingent use; or
  - conditions which have been agreed to by the licensee.

If a licensee has agreed to pay compensation to another person in terms of any arrangement to use water, the responsible authority may make the obligation to pay compensation a condition of the licence.

### **Claiming compensation due to severe prejudice of an undertaking**

The following persons may in terms of Section 22(6) claim from the water tribunal compensation for financial loss suffered:

- A person who has applied for a licence as part of the compulsory licence procedure in respect of an existing lawful water use and-
  - whose application has been refused resulting in severe prejudice to the economic viability of an undertaking in respect of which the water was beneficially used; or
  - who has been granted a licence for a lesser use than the existing lawful water use resulting in severe prejudice to the economic viability of an undertaking in respect of which the water was beneficially used; and
- a person to whom a licence was issued if the conditions of that licence were so amended that they severely prejudice the economic viability of any undertaking in respect of which the licence was issued.

The amount of compensation payable is determined in accordance to the Constitution. The following reductions in the water use must be disregarded in order to:

- provide for the Reserve;
- rectify an over-allocation of water use from the resource in question; or

- rectify an unfair or disproportionate water use.

## Legal procedure to transfer water uses

### Regulations regulating transactions in water use

Although the water use authorisation system is based on a purely administrative system (i.e. eventually all significant water uses will be authorised by way of licences), the NWA allows for the creation of a market in water use, should this become desirable in certain areas. However this will be subject to varying degrees of control depending on whether it is within a single-user sector or between sectors and whether it is within or between the area of jurisdiction of a water services provider or within water management areas. This should be done so that water resource management is still enhanced on a social and sustainable manner in the long term. For this reason Section 26(1)(l) allows the Minister of Water Affairs and Forestry to make regulations related to transactions in respect of authorisations to use water, including but not limited to-

- the circumstances under which a transaction may be permitted;
- the conditions subject to which a transaction may take place; and
- the procedure to deal with a transaction.

These regulations may differentiate between different water resources, classes of water resources and geographical areas.

No regulations have been made as yet. Only once the regulation has been made is trading of rights to use water under certain circumstances prohibited. Therefore, it is submitted, trading of rights to use water may still take place, provided the necessary authorisation is obtained for that. However, once these regulation have been published, it will assist in establishing a market in water rights.

### Surrendering a right to use water to facilitate a trade

After a trade in a right to use water has taken place, the *buyer* must be authorised to use the water before the traded water could be used and the authorisation of the *seller* must be cancelled or amended. A person holding a right to use water in respect of any land may in terms of Section 25(2) surrender that right or part of that right in order to facilitate a particular licence application for the use of water from the same resource in respect of other land. The annual report of the responsible authority must contain details of this.

Who exercised the water use and how could it be traded? - Water services provider such as a water user association

A separate juristic person could be formed with persons belonging to it as members. Various models are applicable. Some separate juristic person could distribute water to its members while another could only regulate the water in a river while each member takes the water for own usage from a water resource. WUAs are the best known example of these. Others could be companies established without gain. In this document only the framework applicable to WUAs are set out. A WUA derives the right to take water from a water resource, a water use, subject to the provisions of the NWA of 1998, from the fact that the persons to whom the water is supplied are members of the association and they have the right to receive water from the association in terms of the constitution of that association. The right that the members have to receive water from the association should be property for the purpose of Section 25 of the Constitution.

From this must be distinguished the situation where persons obtains water from a separate formed person while they are not members of that separate person, for example a water services provider<sup>21</sup> who supplies water in terms of an Act or a contract to consumers. The water services provider derives the right to take water from a water resource from the legal instrument that has established it. The rights of the persons to whom the water is supplied depend on the provision of the Act or contract. Usually these rights could not be traded.

Who exercised the water use and how could it be traded? - What is a water user association?

The Minister of Water Affairs and Forestry may in terms of Section 92 establish WUAs. A WUA operates at a restricted localised level as co-operative association of individual water users, which may be from more than one sector, who wish to undertake water-related activities for their mutual benefit, such as water distribution.

Previously only irrigators could form a statutory body under the water legislation (known as irrigation boards) to undertake water-related activities for mutual benefit. All water users<sup>22</sup> could now, with the approval of the Minister, form water user associations. The existing irrigation boards have all been transformed to water user associations.

A water user association has no power to alter or abate water uses, except if the responsible authority has delegated that authority to the association. The association only manages the rights of the members as set out in the constitution of the association.

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<sup>21</sup> This could for example be a local authority or a public water services provider.

<sup>22</sup> A water user is probably someone who exercises one of the water uses referred to in section 21. A person who receives water from a water services provider is therefore strictly speaking not a water user. The water services provider who takes the water from the water resource to distribute it, is a water user. The Act does not specify that only water users may be members of a water user association or that at least one of the members of the association must be a water user. Therefore, persons who want to establish a legal person to take water from a water resource and to distribute the water to them, may, with the approval of the Minister of Water Affairs and Forestry, establish a water user association. The water user association is strictly speaking the water user, while the members to whom water is supplied, are not.



This could result in the following:

- If a water user association owns a waterworks:
  - The association abstracts the water from a water resource and supplies the water to the different members with the works; or
  - the association obtains water from a governmental waterworks and supplies the water to the different members with the works owned by the association.
- If a WUA owns waterworks regulating the flow in a river with this works and controlling the abstracting of water from the river:
  - The different members abstract the water with works owned by them; or
  - other water user associations abstract the water from the river and convey the water to their different members with their works.
- If a WUA owns no waterworks:
  - The association controls the abstraction of water from a river by the different members with works owned by the members;
  - the association controls the abstraction of water from a river by other WUAs who then supply the water to their different members; or
  - the water is obtained from and conveyed by works belonging to the State to the different members of the WUA and the association has only a supervision and advisory responsibility.

If the WUA takes water from a water resource to supply it to its members, then that taking of the water is a water use and should be regulated as such in terms of the NWA.

If a person receives water from a canal owned by WUA, then the receiving of and using the water are not water uses and could therefore not be regulated as water uses in terms of the NWA. It should be regulated in terms of the conditions for provision of water services of the association as contained in its constitution.<sup>23</sup>

### **Trading of a right to water**

If a member of a water user association who is receiving water from a canal owned by a water user association wants to trade the water received, then the trade must take place as set out in the constitution of the association. If the constitution does not regulate that, then the constitution has to be amended to allow for that, or else the

<sup>23</sup> A proposal to the Minister to establish a water user association must contain the proposed constitution of the association. Schedule 5 to the Act contains a model constitution for water user associations. The model constitution does not deal with trading of rights and with the case where the members do not take water from a water resource but only receive their water from the canals of the association. These matters should be included in the constitution of a water user association to allow water user associations to function effectively and to ensure that trading of rights could take place. A constitution or an amendment to it has to be approved by the Minister of Water Affairs and Forestry before it could take effect.

trade could not take place. Further, if the water is to be traded to a non-member of the association and the traded water will after the trade be taken from a water resource, then, because the water user association undertakes the water use and associated activity involved ("taking water from the water resource" and supplying the water to the member who wants to trade the right), the association has to trade that part of the water use involved to the non-member, and for that the provisions of the Act dealing with the trading of a water use is also applicable to that trade.

It could be that the conditions of the authorisation that the WUA has to take the water from a water resource are structured as such that the trading is directly or indirectly prohibited, and if so, then the WUA should apply to the responsible authority to amend the condition of the authorisation so as to give effect to the trading.

If a member of the WUA wants to trade water that he or she takes directly from a water resource, then the trade should take place as for an individual water user. The trade must also comply with the provisions of the constitution of the water user association.

Water obtained from government waterworks - What is a government waterworks?

The Minister of Water Affairs and Forestry may in terms of Section 109 acquire or construct a government waterworks in order to protect, use develop, conserve, manage and control the water resources. The Minister may in terms of Section 112 make water available from such works for allocation in accordance with Chapter 4 of the NWA. The Minister may fix a charge for water located from the works.

It seems that these provisions only deal with the situation where water is released from the works into a river to be abstracted by the different water users. Such an abstraction is a water use and could be regulated as such.

The NWA therefore does not make provision for the situation where the State supplies the water by way of canals to the different users, as the receiving of the water is not a water use as contemplated in Chapter 4 of the NWA. As it is a common practice in South Africa, the NWA should be amended to cater for this situation. It should be possible to supply water to the different irrigators and other users in terms of the rules containing the conditions for the provision of water services from a government waterworks. In the meantime, to give some legal clarification on the matter, the State could conclude agreements with the different irrigators and other users setting out the rules containing the conditions for the provision of water services from these works. A water user association could also be established, if not yet, so that an agreement is only necessary between the State and association while the water is supplied to the different irrigators and users.

If the State takes water from a dam<sup>24</sup> to supply it to the irrigators, then that taking of the water is a water use and should be regulated as such in terms of the NWA.

#### Water obtained from government waterworks - Trading of rights to water

If the water is released from the works into a river to be abstracted by the different water users, and a person wants to trade that right, the trade should take place as for an individual water user.

As the NWA does not make provision for the situation where the State supplies the water by way of canals to the different users, as it is not a water use and could therefore not be regulated as such, it is unclear how a trade could take place. The NWA should be amended to cater for that. If agreements are concluded as suggested then the agreements should set out how trading of the water should take place.

#### Individual water user - When is a person an individual water user?

If a person, for example an irrigator, abstracts water from a water resource for own usage, then that abstracting of the water is a water use and should therefore be regulated as such as in terms of the NWA. It does not matter whether the person is a member of a water user association or the water is released from a government waterworks.

It is also possible that two or more persons could own a waterworks jointly as co-owner.<sup>25</sup> In such a case each one of them is a water user, each for the part of the water taken by the joint works.

#### Individual water user - Trading a right to water

If an irrigator wants to trade the water use, then the provisions of the NWA dealing with the trading of a water use is applicable to that trade.

### Economic aspects relating to the trading of water

Section 56 allows the Minister to establish a pricing strategy for the different water uses. Such a strategy has been established in Government Notice 1353 of 12 November 1999 and contains a strategy for setting water uses charges for funding water resource management, water resource development and achieving the equitable and efficient allocation of water. Water management institutions must set water use charges according to this strategy.

<sup>24</sup> A dam is a water resource.

<sup>25</sup> In such a case, there is no separate legal person, like a water user association, owning the works.

As far as achieving the equitable and efficient allocation of water is concerned, Item 5.3.3 of the pricing strategy states that in the context of increasing water resource scarcity, it may be necessary to introduce additional economic incentives in order to optimise the allocation of scarce water resources between competing uses. These incentives could be introduced in water-stressed areas. The objective of this is to shift water use from low to high value use.

#### Water markets

Water markets<sup>26</sup> will be used to shift water use from low to high value use. Item 5.3.3 states "tradable water use entitlements will promote the shift from low to high value use of water and may obviate the need for administratively set prices in the water-stressed areas where there is an increasing water demand. The advantage of making a water use entitlement tradable, is that it allows for a more efficient user to buy the entitlement from an existing, but less efficient, holder of the entitlement. The NWA provides for trading in water use entitlements. The NWA recognises, however, that while the trading of entitlements between uses may optimise the economic use of water, they may in turn impose considerable external costs on the rest of the local economy. Thus, trading in water use entitlements would have to be subject to some form of control to protect the public interest as opposed to the interests of the contracting parties. The necessary regulations in terms of Section 26(1) of the NWA must first be made."

#### Allocating rights due to a public tender and auction process

The Minister may in terms of Section 26(1)(n) by regulation prescribe procedures for the allocation of water by means of public tender or auction. No regulations have been made.

It is submitted that public tender and auction of water may take place before and during compulsory licence process and after completion of the compulsory licence process. During the compulsory licence process the proposed allocation schedule must reflect the quantity of water allocated to every applicant by public tender or auction.

Item 5.3.3 states that public auction "could be followed in areas which are under water stress ... and for which compulsory licences have been issued. The issuing of new permits for any remaining water could be effected through a bidding or tendering process for certain catchment or sub-catchment areas. The highest bids or tenders would be awarded the available permits at a price equal to the lowest bid above the cut-off, or, in other words, at the price that clears the market by allowing users to take up the entire available supply. The price established in this manner should be an efficient and economic price for water in that particular area and for the specified water use. The scarcity value of water would now be implicitly

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<sup>26</sup> A water market is defined in item 9 of the pricing strategy as a market where water is traded in the same fashion as other goods.

reflected in the bids that are made by competing water users. Prospective permit holders would thus compete with each other for entitlements, facilitating a move away from the administrative setting of first tier prices towards a market-oriented approach to price determination. The public auction concept stops short of making provision for a fully-fledged water market in that the permits representing water use entitlements would not be traded freely among competing water users."

### **Information systems**

The Minister must as soon as reasonably practicable in terms of section 139 establish national information systems regarding water resources. The information systems may include, among others a register of water use authorisations.

The Minister may in terms of Section 141 require in writing that any person must, within a reasonable given time or on a regular basis, provide the Department with any data, information, documents, samples or materials reasonably required for the:

- purposes of any national monitoring network or national information system; or
- management and protection of water resources.

Information contained in any national information system established must in terms of Section 142 be made available by the Minister. This is subject to any limitations imposed by law and the payment of a reasonable charge determined by the Minister. The Minister may in terms of Section 43 make regulations prescribing:

- guidelines, procedures, standards and methods for monitoring; and
- the nature, type, time period and format of data to be submitted.

### **DISCUSSIONS AND CONCLUSION**

It seems that natural flowing and running water is *res omnium communes* in South Africa. The water belongs to no one in particular but to all and those in need thereof could obtain rights to use it, with the State having the responsibility to allocate and regulate these rights in the public interest. This principle allows trading of rights to use water on a market as a mechanism in order to achieve efficient and equitable water utilization.

Under the previous legislation, rights to water were based upon the location of the water resource in relation to land for certain purposes (the so-called riparian principle), although various mechanisms were in place to provide access to water for non-riparian owners. Trading of rights to water was possible, although the high transaction costs, lack of an effective institutional framework and policy statements resulted in that market trades were rare. In areas where institutional structures were in place, such as a regulatory body and infrastructure like storage dams and

distribution canals, markets developed and functioned more effectively after 1993 than in areas where these lacked. Further, the more a water resource was under stress the bigger was the change for a market to come into being. Even in areas where water resources were not under stress and nearly no institutional structures were in place some form of trade took place. If there was a need for water, "a farmer (as a buyer or a seller) always made a plan".

The new national water policy and the NWA of 1998 brought about a new framework to water resource management. The riparian principle does not apply anymore and instead the framework is now to allocate water to achieve the "best possible use" of the water. This involves more than productive use of water as it is necessary to weigh up social, economic and environmental objectives to achieve equity, efficiency and sustainability. Preference will be given to basic human needs and to protection of ecosystems and to international obligations.

Water allocations will no longer be permanent, but will be granted for a five year cycle with a maximum length of forty years. The allocations could be granted based on either the proportional or prior principles or both. An allocation remains in force until the end of the period, when it expires. The allocation could be suspended or withdrawn if there is non-compliance with the conditions of the authorisation. Allocations will be granted subject to a number of conditions and the guideline will be the criteria of "best possible use".

All significant water uses will eventually be licensed. A process to register the uses, allowing water uses to take place under a system of general authorisations, inviting applications for licences to use water and evaluating these applications will be followed to achieve this. The invitation for applying for licences will be done in sequence of priority areas. Areas under water stress will generally be considered first.

Water uses that actually took place when the NWA came into operation could be continued with provided it was lawful when it took place. These uses will eventually be converted to licences, as part of the process of inviting applications for licences, if these uses are beneficial and in the public interest. Those persons who were entitled to use water under the legislation repealed by NWA of 1998 but who did not exercised these rights, may not start to exercise these rights or for that matter trade those rights. These rights are not acknowledged in the new framework. If such a person wants to use water, the person has to obtain authorisation for that, just like any other newcomer, either by way of a general authorisation or a licence.

The new framework allows for trading in water-use allocations. According to the policy, this will only be allowed in limited areas and will be subject to varying degrees of control depending on whether it is within a single-user sector or between different water user sectors and whether it is between water management areas. Attention will be given whether the equity objectives and fair resource allocations are achieved.

A water use is defined in the NWA as the "taking of water from a water resource" and not the "using of the water". The "taking of the water from the water resource" should therefore be regulated as a water use and that use could be traded as a water use. On the other hand, a person who receives water supplied by a water services provider with a distribution system and who uses that water is not undertaking a "water use" and that could therefore not be regulated as a water use. It is the water services provider who takes the water from a water resource that undertakes a "water use".

The using of water received from a water services provider by way of a distribution system and the trading of that right should be regulated in terms of the conditions for provision of water services of the water services provider. If the services provider is a water user association, then it should be contained in the constitution of that association. The NWA does not provide a framework if the services provider is the State. Agreements could be concluded to regulate the matter. The authorisation of the water services provider to take the water from the water resource could specify how the water should be distributed to the different persons receiving the water and how they should use it. The services provider should then incorporate these into the conditions for provisions of water services.

A right to use water, which is the basis of the new water policy and the NWA, is not ownership of property. However, it is submitted that water used by a person, irrespective of whether it is a "water use" as contemplated in Section 21 of the NWA or a "right to receive water from a water services provider in terms of the conditions for the provision of water services", is a property right or right in property as contemplated in Section 25 of the Constitution (the property clause). The confiscation of the property without compensation (except if it is reasonable and justifiable in an open and democratic society based on human dignity, equality and freedom) is therefore also applicable to the water used while a person may be deprived from this water without compensation. If the effect of implementing the new water policy to achieve "best possible water use" results in that existing use of water is reallocated, then no compensation is payable for that. However, the NWA allows for paying of compensation in certain circumstances as far as water uses that actually took place when the NWA came into operation are concerned.

The Constitution permits a deprivation of a right to water which is imposed in accordance with a law of general application. Such a deprivation permits the regulation or reduction of water rights without compensation provided such deprivation or reduction is not arbitrary. Compensation is only payable in the case of an expropriation. Any taking of property which does not involve the transfer of rights and the acquisition of those rights by the expropriator or any other person is not an expropriation and does not carry with it an obligation to compensate.

Any taking or deprivation disguised not to be an expropriation to avoid compensation will be set aside on the basis of arbitrariness. The requirement of non-arbitrariness demands that any act of taking by the State should be carefully analysed to ascertain whether it "goes too far" so as to render it arbitrary,



unreasonable or unjustifiable in an open and democratic society. In most cases such an analysis will only be possible on an *ad hoc* basis.

The provisions of the NWA are regulatory in nature. Whilst some of these provisions clearly provide for a deprivation and a reduction of rights, such as for the Reserve, they fall short of an expropriation of the rights and therefore do not create an obligation on the State to compensate for them. A taking away of rights without compensation of a right for the purpose of redressing past racial discrimination is not permitted unless it is reasonable and justifiable.

Not acknowledging the rights of persons who were entitled to use water under the legislation repealed by the NWA but who have not exercised these rights, may be reasonable and justifiable in an open and democratic society based on human dignity, equality and freedom. Therefore no compensation is payable for this. These persons have the right to apply for a licence to use water. Although the location of the water resources in relation to their land is in itself not a factor to be considered before a licence is issued, the location of the land has to be taken into consideration to determine whether a water use is the "best possible use" when it competes with a use further away from the water resource.

Although a "water use" and the right "to receive water from a water services provider" are only rights to use water and not ownership in water, these are vested rights in water. These rights are probably not secured in their attributes for various reasons, for example-

- as far as existing lawful water uses are concerned, the same problems of the previous framework experienced in interpreting and applying the principles of the repealed water legislation still apply to these uses and it is uncertain how and when these will be converted to licences;
- as far as rights in terms of a general authorisation made generally are concerned, these are probably made without considering the actual water available in a specific resource and whether it is the "best possible use" and may be revoked at any time; and
- as far as rights in terms of licences are concerned, these are reviewed at least every five years and are for a period of not longer than forty years.

As all significant water uses will eventually be licensed, these rights could become more secure, depending how the policy is implemented. Water rights could become more definable in terms of unit of measurement, reliability and priority of the right.

When an existing lawful water use is traded, a licence replaces the existing lawful water use. The existing lawful water use then loses the benefits it had as an existing lawful water use (for example the right to claim compensation) when the compulsory licensing process is applied.

There is an obligation on the Minister of Water Affairs and Forestry to establish a



register of water uses, as part of a national water information system, that could facilitate the trading of rights to water. Other information necessary to determine the potential harm to third parties and the environment are also part of this information system. The Promotion of Access to Information Act 2 of 2000 further provides a framework to requests for records of public bodies and private bodies.

The new framework severe the right to water from land and it is allocated to a specific person. The NWA allows that this right could be transferred from the holder of the authorisation to another. A legal framework is in place to determine the potential harm to third parties and the environment so that the necessary steps could be taken to minimise this.

The new framework allows trading of a right to "take water from a water resource" and to "receive water from a water services provider in terms of the conditions for the provision of water services", although this is not absolute and may be limited so as to ensure that effective water resource management is enhanced.

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**APPENDIX 3:      A LIST OF REASONS WHY AN APPLICATION FOR  
TRADE IN A WATER USE ENTITLEMENT CAN BE  
UNSUCCESSFUL**

As an illustration of the complexity of issues involved in approving or rejecting an application to trade water use entitlement the following list of considerations is provided. It seems formidable but serves as an illustration as to why a water use entitlement cannot be traded without the intervention of regulating bodies.

The following provide a hydrological basis for rejecting an application to transfer water use entitlement, except if it is shown those effective measures could be put in place to manage the impacts effectively:

1.     The water use at issue does not constitute a lawful entitlement to water.
2.     The seller and buyer are in different Water Management Areas.
3.     The buyer will be using a different watercourse<sup>1</sup> within the same Water Management Area.
4.     The transfer will not comply with the strategic framework of the NWRS or the CMS.
5.     The transfer reduces the options to redress the consequences of past racial and gender discrimination.
6.     The present and likely future risk of occurrence of water shortages and the magnitudes of such shortages (on a monthly basis) to the seller are higher than that which will be available to the buyer at the proposed new site of water abstraction from the watercourse. This will have an adverse effect on other existing lawful water users and river flow for aquatic ecosystems.
7.     The existing conveyance systems have inadequate capacity.
8.     New waterworks that have unacceptable environmental impacts will be required.
9.     The losses from the system (such as river channel and transmission losses) and through interception of the water by other users between the existing abstraction site of the seller and where it is required to compensate for the intended use by the buyer will be increased

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<sup>1</sup> A watercourse means a system of surface water and groundwater that, by virtue of their physical relationship, constitutes an unitary whole that normally flows into a common terminus such as the sea, a lake or an aquifer. This has a hydrological basis that can differ from the spatial area associated with a catchment or basin.

10. Conveyance and storage losses (such as evaporation losses from existing small dams) caused by the seller will continue to occur.
11. Due to the relative situations of the abstraction sites of the seller and buyer the transaction will cause a net increase in the water supplied from existing storage that exceeds the increase in the utilisable quantity of water available from unregulated flows.
12. Due to the relative situations of the abstraction sites of the seller and buyer the transaction will cause certain portions of the watercourse to experience an unacceptable decrease in water quality due to reduced flows.
13. The quantity and quality of the return flows or effluent flows that will be produced by the buyer that will enter the watercourse will be of a lower quality than those of the seller and cause an unacceptable overall decrease in water quality.
14. The usable return flows or effluent flows produced by the buyer that enter the watercourse will be less than those produced by the seller.
15. The buyer will abstract water from the watercourse at higher instantaneous rates, causing greater undesirable flow variations in the rivers.
16. The watercourse is stressed and more water is required for the Reserve or for the neighbouring states. The intended additional investment or disuse of an existing investment is not beneficial or will be made by the buyer before licensing or compulsory licensing has been completed for the watercourses of concern.
17. Erosion of the catchment and the sediment load in the rivers will increase.
18. Unsatisfactory options available to mitigate negative socio-economic effects (such as loss of employment provided by the seller) and other negative environmental effects resulting from the transaction.
19. Negative socio-economic effects on the region (such as water transfers from the Eastern Cape to the Orange Rivers, depriving the Eastern Cape of development options).

**APPENDIX 4:       INDICATORS AND CHECKLIST FOR THE  
ASSESSMENT OF WATER USE LICENSE  
APPLICATIONS, ACCORDING TO THE NWA**

The list below provides the sequential steps involved in assessing an application to trade. It indicates the section of the NWA that is applicable and the indicators that needs evaluation before an application can be approved or rejected.

1. NWA, Sections 5-7  
Check: Is the proposed water use in line with the NWRS?
2. NWA, Sections 27(1)(e)  
The CMS applicable to the relevant water resource  
Check: Is the proposed water use in line with the CMS?
3. NWA, Section 27(1)(j)(i)  
The quality and quantity of water in the water resource which may be required for the Reserve.  
Indicators:
  - 3.1 The likely effect of the proposed use on the quality and quantity of water required for the reserve for basic human needs in respect of water quantity and water quality
  - 3.2 The likely effect of the proposed use on the quality and quantity of water required for the Reserve for the aquatic ecosystem in respect of water quantity and water quality
4. NWA, Section 27(1)(j)(ii)  
The quantity and quality of water in the water resource which may be required for meeting international obligations  
Indicator:  
The likely effect of the proposed use on quantity and quality of water available to meet international obligations
5. NWA, Section 27(1)(g)  
The class and the resource quality objectives of the water resource  
Indicator:  
The likely effect on the proposed use on the class and resource quality objectives
6. NWA, Section 27(1)(i)  
The strategic importance of the water use to be authorised  
Indicator:  
The extent to which the proposed use is in line with the strategic development objectives of the Government

7. NWA, Section 27(1)(a)

Existing lawful water uses

Check whether:

- 7.1 The use applied for has an existing license, authorisation, permit, or is scheduled under a Government Water Scheme or Irrigation Board.
- 7.2 The use applied for is deemed to be an existing lawful water use under the previous act, Act 54 of 1956, but no documentation is available (e.g. an exercised riparian right)
- 7.3 The use under consideration has been declared an existing lawful water use under Section 33 of the NWA.
- 7.4 The applicant has already commenced the use being applied for, which may be considered unlawful, prior to the license being issued.
- 7.5 The use being applied for is a new use.

8 NWA, Section 27(1)(f)

The likely effect of the water use to be authorised on the water resource and on other water users

Indicators:

- 8.1 The likely effect of the proposed water use on the water quality of streams regarding their fitness for use, compared to the South African water quality standards.
- 8.2 The extent to which the proposed use complies with waste standards, Section 26(1)(h), or national standards in terms of the Water Services Act, 1997, Section 6(1)(a)(ii) of the NWA.
- 8.3 The likely effect of return flows emanating from the proposed use on water quality.
- 8.4 The impact of the proposed use on the volume of water allocated to other users in the catchment.
- 8.5 The impact of the proposed use on the volume of water available to future users, not yet in a position to develop.

9. NWA, Section 41(3)

Compliance with the requirements contained in the regulations made under section 26 of the Environmental Conservation Act, 1989.

Check whether:

- 9.1 Authorisation has been obtained from the relevant Provincial Environmental Authority.
- 9.2 Departmental Environmental Impact Assessment (EIA) requirements have been met.

10. NWA, Section 41(4)

Comments/objections from stakeholders and interested and affected parties.

Check:

Have objections been satisfactorily mitigated?

11. NWA, Section 27(1)(b)

The need to redress the results of past racial and gender discrimination.

Indicators:

- 11.1 The extent to which economic empowerment of previously disadvantaged individuals, races and groups will take place through the proposed use.
  - 11.2 The extent to which the proposed water use will contribute to the upliftment of previously disadvantaged individuals, races and groups.
  - 11.3 The extent to which the proposed water use will promote economic empowerment of women.
  - 11.4 The extent to which the proposed water use will contribute to the upliftment of women.
12. NWA, Section 27 (1)( c)  
Efficient and beneficial use of water in the public interest.  
Indicators:
- 12.1 The level of efficiency of the proposed water use, section 22(2)(d).
  - 12.2 The effect of the proposed use on accepted demand management/conservation programmes on the water quantity and water quality.
13. NWA, Section 27(1)(d)(i)  
The socio-economic impact of the water use or uses if authorised.  
Indicators:
- 13.1 The likely net economic benefit of the water use.
  - 13.2 The effect of the proposed water use on the number of employment opportunities.
  - 13.3 Indicated impact on local skills programmes and/or expertise.
  - 13.4 Expected social changes as a result of water use applied for.
14. NWA, Section 27(1)(d)(ii)  
The socio-economic impacts of the failure to authorise the water use or uses  
Indicator:
- The extent to which social and economic upliftment in the area will be negatively affected if the application is refused.
15. NWA, Section 27(1)(h)  
The investments already made and to be made by the water user in respect of the water use in question.  
Indicators:
- 15.1 The extent to which the net present value of the investment already made by the applicant will be prejudiced if the application is refused.
  - 15.2 Future/existing overseas and local contractual obligations.
16. NWA, Section 27(1)(k)  
The probable duration of the undertaking for which a water use is to be authorised.  
Check whether:
- 16.1 The proposed undertaking is of a temporary nature with a duration of 0-2 years.
  - 16.2 The proposed duration of the undertaking is 2-5 years.

- 16.3 The proposed duration of the undertaking is 5-20 years.
- 16.4 The proposed duration of the undertaking is 20-40 years
- 16.5 The proposed undertaking has an expected lifespan in excess of 40 years

17. NWA, Section 41(4)

Compliance with other relevant legislation

Check:

- 17.1 Is authorisation from any Government Department required (e.g. Dept of Agriculture- breaking new land)
- 17.2 Has the necessary authorisation been applied for or obtained?

18. Water Services Act, Section 7

Water Services Development Plans

Check:

Is the proposed use in line with the accepted Water Services Development Plans.

19. Technical information

Indicators:

Has sufficient information been supplied in order to assess the application?



**APPENDIX 5: EVALUATION FORM FOR THE ASSESSMENT OF AN APPLICATION FOR A LICENSE TO USE WATER.**

This is an example of the format in which the evaluation of a license application is done.

**EVALUATION ANNEXURE**

These tables contain the methodology for evaluating water use licence applications and should be used in conjunction with the report entitled:

**"GUIDELINES FOR THE ASSESSMENT OF WATER USE AUTHORISATIONS AND LICENCE APPLICATIONS IN TERMS OF THE NATIONAL WATER ACT, 1998,"**

which forms part of the NWRS.

**NOTE:**

*The tables should be used as a guide. The intention is not that they be followed slavishly. A flexible approach should be adopted, as it is impossible to compile a system which covers all eventualities. In some cases indicators given will not apply, in others, different indicators may be required.*

**SUMMARY**

|                   |                                          |
|-------------------|------------------------------------------|
| Section 27(1) (b) | Race and gender                          |
| Section 27(1) (c) | Efficient and beneficial use             |
| Section 27(1) (d) | Socio-economic impact                    |
| Section 27(1) (e) | Catchment management strategy            |
| Section 27(1) (f) | Effect on water resource and water users |
| Section 27(1) (g) | Class and resource quality objectives    |
| Section 27(1) (h) | Investments made and to be made          |
| Section 27(1) (i) | Strategic importance                     |
| Section 27(1) a)  | Reserve and international obligations    |

**AVERAGE**

| % |
|---|
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## 1. EVALUATION CRITERIA FOR DECISIONS ON WATER USE APPLICATIONS

The tables in the Annexure have been drawn up to enable the extent to which the various subsections of the NWA have been satisfied to be evaluated. This is done by assigning one or more indicators to each consideration, to assist in the evaluation. The indicators are by no means exhaustive and in some cases, additional, more applicable indicators may need to be added. The tables will also serve as a record of evaluation leading to a decision.

The first three tables are merely for the assessor to note the status of the application, whilst the remainder of the tables are for assessment purposes as described below.

The importance or relevance of each indicator should be assessed and entered in the appropriate column on a scale from 0 to 5 under "A" in the ensuing tables. If an indicator has no relevance, whatsoever, it gets 0 and if it is critically important it deserves a 5.

The extent to which the proposed water use meets the requirements of the indicator under discussion is also assessed on a scale from 0 to 5 under section "B", with 0 being "totally unacceptable" and 5 being "exceptional". An attempt has been made to describe the degree of compliance with the indicator in each of the categories. The wording should not be assumed to be cast in concrete, but should rather be taken as a broad guideline as to the degree of compliance with the indicator. When considering an application, its size will determine the extent to which the indicators should be applied on a local, regional or national basis where applicable.

The maximum number of points able to be scored is derived by multiplying the value given in column "A" by 5, whilst the actual number of points scored is obtained by multiplying the value in column "A" with that in section "B" for each indicator.

In this way, a total may be obtained for each of the sub-sections of Section 27 (1). The percentage compliance can then be calculated for each consideration to get a "feel" for the acceptability of the application with respect to the particular consideration, whilst an overall total and percentage should be calculated at the end, by aggregating the percentages as per the tables below. Any score above 50 % could be regarded as acceptable. Higher scores can be used to compare applications and their degree of acceptability in order to prioritise applications.

It should be borne in mind that in some cases, an application which scores a "0" or a "1" under "B" may have to be rejected outright in a "fatal flaw" situation, if no mitigation is possible. As stated in each table, all indicators which give an unacceptable and unsatisfactory score, must be managed until a reasonably acceptable impact has been obtained.

There may, on the other hand, be cases where a use may have to score a "5" in order to qualify.

# ANNEXURE TO APPENDIX E

Name of Applicant:

Reference No.

| ASSESSMENT OF WATER USE LICENSE APPLICATIONS IN TERMS OF THE NATIONAL WATER ACT, Act No 36 of 1998                                                                                               |                                                                      |               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|---------------|
| CONSIDERATION                                                                                                                                                                                    | EXISTING LAWFUL WATER USES<br>National Water Act - Section 27 (1)(a) | Paragraph 3.6 |
| The use applied for has an existing license, authorisation, permit, or is scheduled under a Government Water Scheme or Irrigation Board, or has a Water Court Order (documentation is available) |                                                                      |               |
| The use applied for is deemed to be an existing lawful water use under the previous act, Act 54 of 1956, but no documentation is available                                                       |                                                                      |               |
| The use under consideration has been declared an existing lawful water use under Section 33 of the National Water Act                                                                            |                                                                      |               |
| The applicant has already commenced the use being applied for which may be considered unlawful, prior to a license being issued                                                                  |                                                                      |               |
| The use being applied for is a new use                                                                                                                                                           |                                                                      |               |

\* Tick the appropriate blocks

Name of Applicant:

Reference No.

**ASSESSMENT OF WATER USE LICENSE APPLICATIONS IN TERMS OF THE NATIONAL WATER ACT, Act No 36 of 1998**

CONSIDERATION THE PROBABLE DURATION OF THE UNDERTAKING Paragraphs 3.15  
FOR WHICH A WATER USE IS TO BE AUTHORISED and 3.16  
National Water Act - Section 27 (1)(k)

|                                                                         | CHECK WATER<br>AVAILABILITY<br>FOR<br>DURATION | CHECK FOR<br>LICENSE PERIOD<br>COMPATABILITY |
|-------------------------------------------------------------------------|------------------------------------------------|----------------------------------------------|
| The proposed undertaking is of a temporary nature                       |                                                |                                              |
| The proposed undertaking will be less than 5 years in duration          |                                                |                                              |
| The proposed duration of the venture is 5-20 years                      |                                                |                                              |
| The proposed duration of the venture is 20-40 years                     |                                                |                                              |
| The proposed undertaking has an expected lifespan in excess of 40 years |                                                |                                              |

\* Tick the appropriate blocks

Name of Applicant:

Reference No.

**ASSESSMENT OF WATER USE LICENSE APPLICATIONS IN TERMS OF THE NATIONAL WATER ACT, Act NO 36 of 1998.**

| CONSIDERATION                                                                        | COMPLIANCE WITH THE REQUIREMENTS<br>CONTAINED IN REGULATIONS MADE UNDER<br>SECTION 26 OF THE ENVIRONMENTAL CONSERVATION<br>ACT, 1989 (Act No. 73 of 1989)<br>National Waster Act - Section 41(3) | Paragraph 3.10 |     |  |
|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|--|
|                                                                                      | Note: In some cases this section may be adequately covered by the Provincial Department of Environmental Affairs                                                                                 |                |     |  |
|                                                                                      | N/A                                                                                                                                                                                              | NO             | YES |  |
| Authorisation has been obtained from the relevant Provincial Environmental Authority |                                                                                                                                                                                                  |                |     |  |
| Departmental EIA Requirements have been met                                          |                                                                                                                                                                                                  |                |     |  |

\* Tick the appropriate blocks

| CONSIDERATION                                                                                  | EFFICIENT AND BENEFICIAL USE IN THE PUBLIC INTEREST | Paragraph 3.13 |     |  |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------|----------------|-----|--|
|                                                                                                |                                                     |                |     |  |
|                                                                                                | N/A                                                 | NO             | YES |  |
| Does the applicant have an acceptable demand management/water conservation programme in place? |                                                     |                |     |  |

\* Tick the appropriate blocks

Name of Applicant:

Reference No.

## ASSESSMENT OF WATER USE LICENSE APPLICATIONS IN TERMS OF THE NATIONAL WATER ACT, Act NO 26 of 1998.

| CONSIDERATION                                                                                                                                   | THE NEED TO REDRESS THE RESULTS OF PAST RACIAL AND GENDER DISCRIMINATION<br>National Water Act - Section 27 (1)(b) |   |   |   |   |   |                                                                                                                           |                                                                                                                                   |                                                                                   |                                                                                                                              |                                                                                                                                | Paragraph 3.12                                                                                                                                 |                                      |                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------|
| Indicators                                                                                                                                      | Importance of Indicator*<br>(A1)                                                                                   |   |   |   |   |   | Extent to which the assessment requirements are met<br>(B)                                                                |                                                                                                                                   |                                                                                   |                                                                                                                              |                                                                                                                                |                                                                                                                                                | Total Points<br>Obtained<br>(A1)/(B) | Maximum<br>Points<br>Obtainable<br>(A2)*2 |
|                                                                                                                                                 | 0                                                                                                                  | 1 | 2 | 3 | 4 | 5 | 0<br>Totally Unacceptable #                                                                                               | 1<br>Unsatisfactory #                                                                                                             | 2<br>Reasonable with<br>Shortcomings                                              | 3<br>Acceptable                                                                                                              | 4<br>Good                                                                                                                      | 5<br>Exceptional                                                                                                                               |                                      |                                           |
| 1) The extent to which economic empowerment of historically disadvantaged individuals and groups will take place through the proposed water use |                                                                                                                    |   |   |   |   |   | The proposed water use will have a totally unacceptable negative impact on economic empowerment                           | The proposed water use will have an unacceptable impact on economic empowerment                                                   | The proposed water use may have a positive impact on economic empowerment         | The proposed water use will have a positive impact on economic empowerment                                                   | The proposed water use will have a definite positive impact on economic empowerment                                            | The proposed water use will result in a significant positive contribution to the cause of economic empowerment                                 |                                      |                                           |
| 2) The extent to which the proposed water use will contribute to the upliftment of historically disadvantaged groups                            |                                                                                                                    |   |   |   |   |   | The proposed water use will disrupt current upliftment initiatives in the area and will have negative impacts on the area | The proposed water use will not improve the current upliftment initiatives in the area and will have negative impacts on the area | The proposed water use may improve the current upliftment initiatives in the area | The proposed water use will improve the current upliftment initiatives in the area and may have positive impacts on the area | The proposed water use will aid current upliftment initiatives in the area and will have definite positive impacts on the area | The proposed water use will significantly boost current upliftment initiatives in the area and will have definite positive impacts on the area |                                      |                                           |

0: Not applicable at all

1: Not really applicable

2: Applicable with shortcomings

3: Applicable requirement

4: Important requirement

5: Critically important requirement

# All unacceptable and unsatisfactory indicators must be managed to reflect a reasonable impact or a better one.  
If this cannot be achieved a full motivation must be supplied if a license is still to be issued.

Name of Applicant:

Reference No:

| ASSESSMENT OF WATER USE LICENSE APPLICATIONS IN TERMS OF THE NATIONAL WATER ACT, Act NO 36 of 1998. |                                             |                                                                                                                   |   |   |   |   |                                                                                                           |                                                                                           |                                                                             |                                                                                     |                                                                                               |                                                                                                             |                                          |
|-----------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------|---|---|---|---|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------|
| CONSIDERATION                                                                                       |                                             | THE NEED TO REDRESS THE RESULTS OF PAST RACIAL AND GENDER DISCRIMINATION<br>National Water Act - Section 27 (10b) |   |   |   |   |                                                                                                           |                                                                                           |                                                                             |                                                                                     |                                                                                               | Paragraph 3.12                                                                                              |                                          |
| Indicators                                                                                          | Importance of Indicator <sup>a</sup><br>(A) |                                                                                                                   |   |   |   |   | Extent to which the assessment requirements are met<br>(B)                                                |                                                                                           |                                                                             |                                                                                     |                                                                                               |                                                                                                             | Total Points<br>Obtained<br>(A)*5(B)     |
|                                                                                                     | 0                                           | 1                                                                                                                 | 2 | 3 | 4 | 5 | 0<br>Totally Unacceptable #                                                                               | 1<br>Unsatisfactory #                                                                     | 2<br>Reasonable with<br>Shortcomings                                        | 3<br>Acceptable                                                                     | 4<br>Good                                                                                     | 5<br>Exceptional                                                                                            | Maximum<br>Points<br>Obtainable<br>(A)*5 |
| 3) The extent to which the proposed water use will promote gender equity                            |                                             |                                                                                                                   |   |   |   |   | The proposed water use will have a totally unacceptable negative impact on the promotion of gender equity | The proposed water use will have an unacceptable impact on the promotion of gender equity | The proposed water use may have an impact on the promotion of gender equity | The proposed water use may have a positive impact on the promotion of gender equity | The proposed water use will have a definite positive impact on the promotion of gender equity | The proposed water use will result in a significant positive contribution to the promotion of gender equity |                                          |
|                                                                                                     |                                             |                                                                                                                   |   |   |   |   |                                                                                                           |                                                                                           |                                                                             |                                                                                     |                                                                                               |                                                                                                             |                                          |

- 0: Not applicable at all  
 1: Not really applicable  
 2: Applicable with shortcomings  
 3: Applicable requirement  
 4: Important requirement  
 5: Critically important requirement

All unacceptable and unsatisfactory indicators must be managed to reflect a reasonable impact or a better one.  
 If this cannot be achieved a full motivation must be supplied if a license is still to be issued.

SUB-TOTAL 27(1)(b)

|  |   |
|--|---|
|  |   |
|  | 8 |



Name of Applicant:

Reference No.:

| ASSESSMENT OF WATER USE LICENSE APPLICATIONS IN TERMS OF THE NATIONAL WATER ACT, NO 36 of 1998. |                              |   |   |   |   |                                                         |                                                                                            |                                                                                             |                                                                                           |                                                                                         |                                                                                           |
|-------------------------------------------------------------------------------------------------|------------------------------|---|---|---|---|---------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| CONSIDERATION                                                                                   |                              |   |   |   |   |                                                         |                                                                                            |                                                                                             |                                                                                           |                                                                                         |                                                                                           |
| THE SOCIO-ECONOMIC IMPACT OF THE WATER USE OR USES IF AUTHORISED                                |                              |   |   |   |   |                                                         |                                                                                            |                                                                                             |                                                                                           |                                                                                         |                                                                                           |
| Paragraph 3,14                                                                                  |                              |   |   |   |   |                                                         |                                                                                            |                                                                                             |                                                                                           |                                                                                         |                                                                                           |
| Indicators                                                                                      | Importance of indicator* (A) |   |   |   |   | Extent to which the assessment requirements are met (B) |                                                                                            |                                                                                             |                                                                                           |                                                                                         | Total Points Obtained (A*B)                                                               |
|                                                                                                 | 0                            | 1 | 2 | 3 | 4 | 5                                                       | 0<br>Totally Unacceptable #                                                                | 1<br>Unsatisfactory #                                                                       | 2<br>Reasonable with Shortcomings                                                         | 3<br>Acceptable                                                                         | 4<br>Good                                                                                 |
| 1) The likely net economic benefit of the water use                                             |                              |   |   |   |   |                                                         | Proposed use of the water will lead to economic loss                                       | No economic benefit will accrue from the proposed water use                                 | Minor economic benefits will accrue from the proposed water use                           | Preserved economic benefits (thousands of Rand) will accrue from the proposed water use | Tens or thousands of Rand will accrue from the proposed use of this water                 |
| 2) The effect of the proposed water use on the number of employment opportunities               |                              |   |   |   |   |                                                         | Proposal will actually lead to job losses                                                  | No employment opportunities are envisaged with proposed water use                           | Feasibility exists that a number of employment opportunities will be created              | Application will definitely result in a number of employment opportunities              | A reasonable number of employment opportunities will be created by this proposal          |
| 3) Indicated impacts on local skills programmes, and/or expertise                               |                              |   |   |   |   |                                                         | The proposed water use will negatively impact on local skills programmes, and/or expertise | The proposed water use could negatively impact on local skills programmes, and/or expertise | There will be no improvement in local skills programmes, and/or expertise                 | There will be possible improvement in skills programmes and/or expertise                | There will be definite improvements in local skills programmes and/or expertise           |
| 4) Expected social changes as a result of water use applied for                                 |                              |   |   |   |   |                                                         | Living social conditions could decline as a result of the proposed water use               | There will be no improvement in social conditions as a result of the proposed water use     | It is possible that social conditions could improve as a result of the proposed water use | Social conditions will definitely improve as a result of the proposed water use         | It is expected that there will be social upliftment as a result of the proposed water use |

0: Not applicable at all

1: Not really applicable

2: Applicable with shortcomings

3: Applicable requirement

4: Important requirement

5: Critically important requirement

All unacceptable and unsatisfactory indicators must be managed to reflect a reasonable impact or a benefit one. If this cannot be achieved a full motivation must be supplied if a license is still to be issued.

Name of Applicant:

Reference No.:

## ASSESSMENT OF WATER USE LICENSE APPLICATIONS IN TERMS OF THE NATIONAL WATER ACT, Art NO 36 of 1998.

| CONSIDERATION                                                                                                               | THE SOCIO-ECONOMIC IMPACT OF THE FAILURE TO AUTHORISE THE WATER USE OR USES |   |   |   |   |   |                                                                                            |                                                                                                   |                                                                                           |                                                                                | Paragraph 3.34                                                           |                                                                                 |                                     |                                          |  |
|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---|---|---|---|---|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------|-------------------------------------|------------------------------------------|--|
| Indicators                                                                                                                  | Importance of Indicator*<br>(A)                                             |   |   |   |   |   | Extent to which the assessment requirements are met<br>(B)                                 |                                                                                                   |                                                                                           |                                                                                |                                                                          |                                                                                 | Total Points<br>Obtained<br>(A)*(B) | Maximum<br>Points<br>Obtainable<br>(A)*5 |  |
|                                                                                                                             | 0                                                                           | 1 | 2 | 3 | 4 | 5 | 0<br>Totally Unacceptable #                                                                | 1<br>Unsatisfactory #                                                                             | 2<br>Reasonable with<br>Shortcomings                                                      | 3<br>Acceptable                                                                | 4<br>Good                                                                | 5<br>Exceptional                                                                |                                     |                                          |  |
| 1) The extent to which social and economic upliftment in the area will be negatively affected if the application is refused |                                                                             |   |   |   |   |   | There will be an increase in socio-economic activity if the proposed use is not authorised | There will be no decline in socio-economic well being if the proposed water use is not authorised | The proposed water use has no relevance to current socio-economic initiatives in the area | There will be minor adverse consequences if the proposed use is not authorised | There will be adverse consequences if the proposed use is not authorised | There will be severe adverse consequences if the proposed use is not authorised |                                     |                                          |  |

0: Not applicable at all.

1: Not really applicable.

2: Applicable with shortcomings.

3: Applicable requirement.

4: Important requirement.

5: Critically important requirement.

All unacceptable and unsatisfactory indicators must be managed to reflect a reasonable impact or a better one.

If this cannot be achieved a full motivation must be supplied if a license is still to be issued.

SUB-TOTAL 27(1)(b)(ii)

%

Section 27(1)(d)

%

[Average % of 27(1)(b) (i) + (ii)]

Name of Applicant:

Reference No.:

| ASSESSMENT OF WATER USE LICENSE APPLICATIONS IN TERMS OF THE NATIONAL WATER ACT, Act No 36 of 1998. |                                 |                                                                             |   |   |   |   |                                                                                                 |                                                            |                                                    |                                                             |                                                                |                                                                       |                                          |
|-----------------------------------------------------------------------------------------------------|---------------------------------|-----------------------------------------------------------------------------|---|---|---|---|-------------------------------------------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------|-------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------|
| CONSIDERATION                                                                                       |                                 | THE CATCHMENT MANAGEMENT STRATEGY APPLICABLE TO THE RELEVANT WATER RESOURCE |   |   |   |   |                                                                                                 |                                                            |                                                    |                                                             |                                                                | Paragraphs 3.5 and 3.7                                                |                                          |
| Indicators                                                                                          | Importance of Indicator*<br>(A) |                                                                             |   |   |   |   | Extent to which the assessment requirements are met<br>(B)                                      |                                                            |                                                    |                                                             |                                                                | Total Points<br>Obtained<br>(A)*(B)                                   | Maximum<br>Points<br>Obtainable<br>(A)*5 |
|                                                                                                     | 0                               | 1                                                                           | 2 | 3 | 4 | 5 | 0<br>Totally Unacceptable #                                                                     | 1<br>Unsatisfactory #                                      | 2<br>Reasonable with<br>Shortcomings               | 3<br>Acceptable                                             | 4<br>Good                                                      |                                                                       |                                          |
| 1) The impact of the proposed use of water to be allocated on the:                                  |                                 |                                                                             |   |   |   |   | Impact of the proposed use to be allocated is unacceptable and would have negative consequences | Impact of the proposed use to be allocated is unacceptable | Proposed use will have an impact                   | An acceptable impact is expected                            | Impact of the proposed use can be accommodated                 | Impact of the proposed use can easily be accommodated                 |                                          |
| Water Quantity                                                                                      |                                 |                                                                             |   |   |   |   |                                                                                                 |                                                            |                                                    |                                                             |                                                                |                                                                       |                                          |
| Water Quality                                                                                       |                                 |                                                                             |   |   |   |   |                                                                                                 |                                                            |                                                    |                                                             |                                                                |                                                                       |                                          |
| 2) The effect on the assurance of supply on the:                                                    |                                 |                                                                             |   |   |   |   | The effect on the assurance of supply is unacceptable and will have negative consequences       | The effect on the assurance of supply is unacceptable      | There will be an impact on the assurance of supply | An acceptable impact on the assurance of supply is expected | The assurance of supply can accommodate the proposed water use | The assurance of supply can easily accommodate the proposed water use |                                          |
| Water Quantity                                                                                      |                                 |                                                                             |   |   |   |   |                                                                                                 |                                                            |                                                    |                                                             |                                                                |                                                                       |                                          |
| Water Quality                                                                                       |                                 |                                                                             |   |   |   |   |                                                                                                 |                                                            |                                                    |                                                             |                                                                |                                                                       |                                          |

0: Not applicable at all

1: Not really applicable

2: Applicable with shortcomings

3: Applicable requirement

4: Important requirement

5: Critically important requirement

All unacceptable and unsatisfactory indicators must be managed to reflect a reasonable impact or a better one.

If this cannot be achieved a full motivation must be supplied if a license is still to be issued.

Name of Applicant:

Reference No.:

| ASSESSMENT OF WATER USE LICENSE APPLICATIONS IN TERMS OF THE NATIONAL WATER ACT, Act NO 36 of 1998. |                                                                             |   |   |   |   |   |                                                                                                                                                  |                                                                                                           |                                                                                                                |                                                                                                                                    |                                                                                                                                     |                                                                                                                                              |                                 |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---|---|---|---|---|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| CONSIDERATION                                                                                       | THE CATCHMENT MANAGEMENT STRATEGY APPLICABLE TO THE RELEVANT WATER RESOURCE |   |   |   |   |   |                                                                                                                                                  |                                                                                                           |                                                                                                                |                                                                                                                                    | Paragraphs 3.5 and 3.7                                                                                                              |                                                                                                                                              |                                 |
| Indicators                                                                                          | Importance of Indicator* (A)                                                |   |   |   |   |   | Extent to which the assessment requirements are met (B)                                                                                          |                                                                                                           |                                                                                                                |                                                                                                                                    |                                                                                                                                     |                                                                                                                                              | Total Points Obtained (A)*(B)   |
|                                                                                                     | 0                                                                           | 1 | 2 | 3 | 4 | 5 | 0<br>Totally Unacceptable #                                                                                                                      | 1<br>Unsatisfactory #                                                                                     | 2<br>Reasonable with Shortcomings                                                                              | 3<br>Acceptable                                                                                                                    | 4<br>Good                                                                                                                           | 5<br>Exceptional                                                                                                                             | Maximum Points Obtainable (A)*5 |
| 3) The match between the proposed water use and the local or regional development plans             |                                                                             |   |   |   |   |   | There is a totally unacceptable clash between the proposed water use and the local or regional development plans with negative effects expected. | There is an unacceptable clash between the proposed water use and the local or regional development plans | There is a match between proposed water use and the local or regional development plans with some shortcomings | There is an acceptable match between proposed water use and the local or regional development plans with possible effects expected | There is a good match between proposed water use and the local or regional development plan with possible positive effects expected | There is an excellent match between proposed water use and the local or regional development plan with large scale positive effects expected |                                 |
| 4) The extent to which the proposed use is incorporated in a Water Services Development Plan        |                                                                             |   |   |   |   |   | The proposed use cannot be incorporated in a Water Services Development Plan                                                                     | The proposed use could disrupt the existing Water Services Development Plan                               | The proposed use can be incorporated in a Water Services Development Plan                                      | The proposed use can reasonably easily be incorporated in a Water Services Development Plan                                        | The proposed use can easily be incorporated in a Water Services Development Plan with possible positive effects expected            | The proposed use can very easily be incorporated in a Water Services Development Plan with positive effects expected                         |                                 |
|                                                                                                     |                                                                             |   |   |   |   |   |                                                                                                                                                  |                                                                                                           |                                                                                                                |                                                                                                                                    |                                                                                                                                     |                                                                                                                                              |                                 |

0- Not applicable at all

1- Not really applicable

2- Applicable with shortcomings

3- Applicable requirement

4- Important requirement

5- Critically important requirement

All unacceptable and unsatisfactory indicators must be managed to reflect a reasonable impact or a better one.

If this cannot be achieved a full motivation must be supplied if a license is still to be issued.

SUB-TOTAL 23(100)

Name of Applicant:

Reference No.:

| ASSESSMENT OF WATER USE LICENSE APPLICATIONS IN TERMS OF THE NATIONAL WATER ACT, Act NO 36 of 1998.                                                              |                              |                                                                             |   |   |   |   |                                                                                                                                                      |                                                                                                                                        |                                                                                                                |                                                                                                         |                                                                                                                           |                                                                                                                                                    |                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------------------------------------------------------------------|---|---|---|---|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| CONSIDERATION                                                                                                                                                    |                              | THE CATCHMENT MANAGEMENT STRATEGY APPLICABLE TO THE RELEVANT WATER RESOURCE |   |   |   |   |                                                                                                                                                      |                                                                                                                                        |                                                                                                                |                                                                                                         |                                                                                                                           | Paragraphs 3.9                                                                                                                                     |                                 |
| Indicators                                                                                                                                                       | Importance of Indicator* (A) |                                                                             |   |   |   |   | Extent to which the assessment requirements are met (B)                                                                                              |                                                                                                                                        |                                                                                                                |                                                                                                         |                                                                                                                           |                                                                                                                                                    | Total Points Obtained (A)*(B)   |
|                                                                                                                                                                  | 0                            | 1                                                                           | 2 | 3 | 4 | 5 | 0<br>Totally Unacceptable #                                                                                                                          | 1<br>Unsatisfactory #                                                                                                                  | 2<br>Reasonable with Shortcomings                                                                              | 3<br>Acceptable                                                                                         | 4<br>Good                                                                                                                 | 5<br>Exceptional                                                                                                                                   | Minimum Points Obtainable (A)*5 |
| 1. The likely effect of the proposed use on the water quality of streams regarding their fitness for use, compared to the South African water quality guidelines |                              |                                                                             |   |   |   |   | The proposed use will cause a decline in water quality on a regional scale which is unacceptable when compared to the National Guidelines            | The proposed use will cause a decline in water quality on a local scale which is unacceptable when compared to the National Guidelines | The proposed use will cause an imperceptible decline in water quality when compared to the National Guidelines | The proposed use will not cause a decline in water quality when compared to the National Guidelines     | The proposed use will cause an improvement in water quality on a local scale when compared to the National Guidelines     | The proposed use will cause an improvement in water quality on a regional scale when compared to the National Guidelines                           |                                 |
| 2. The likely effect of return flows emanating from the proposed use on water quality                                                                            |                              |                                                                             |   |   |   |   | Return flows will have an unacceptable effect with a decline in water quality on a regional scale                                                    | Return flows will have an unacceptable effect with a decline in water quality on a local scale                                         | Return flows will not have a significant impact on water quality                                               | Return flows will have an acceptable impact on water quality                                            | Return flows will have a positive effect with an improvement in water quality on a local scale                            | Return flows will have a positive effect with an improvement in water quality on a regional scale                                                  |                                 |
| 3. The impact of the proposed use on the volume of water allocated to other users in the catchment                                                               |                              |                                                                             |   |   |   |   | The impact of the proposed use on the volume of water available to other users in the catchment is unacceptable and would have negative consequences | The impact of the proposed use on the volume of water allocated to other water users in the catchment is unacceptable                  | Proposed water use will impact slightly on the volume of water allocated to other water users in the catchment | An acceptable impact on the volume of water allocated to other water users in the catchment is expected | The impact of the proposed use on the volume of water allocated to other water users in the catchment can be accommodated | The impact of the proposed use on the volume of water allocated to other water users in the catchment can easily be accommodated with no prejudice |                                 |
| Water Quantity                                                                                                                                                   |                              |                                                                             |   |   |   |   |                                                                                                                                                      |                                                                                                                                        |                                                                                                                |                                                                                                         |                                                                                                                           |                                                                                                                                                    |                                 |
| Water Quality                                                                                                                                                    |                              |                                                                             |   |   |   |   |                                                                                                                                                      |                                                                                                                                        |                                                                                                                |                                                                                                         |                                                                                                                           |                                                                                                                                                    |                                 |

0 Not applicable at all

1 Not really applicable

2 Applicable with shortcomings

3 Applicable requirement

4 Important requirement

5 Critically important requirement

All unacceptable and unsatisfactory indicators must be managed to reflect a reasonable impact or a better one.

If this cannot be achieved a full motivation must be supplied if a license is still to be issued.

SUB-TOTAL 27 (1) (F)

Name of Applicant:

Reference No.:

## ASSESSMENT OF WATER USE LICENSE APPLICATIONS IN TERMS OF THE NATIONAL WATER ACT, Act NO 36 of 1998.

| CONSIDERATION                                                                                        | THE CATCHMENT MANAGEMENT STRATEGY APPLICABLE TO THE RELEVANT WATER RESOURCE |   |   |   |   |   |                                                                                                                                                                     |                                                                                                                                                                  |                                                                            |                                                                          |                                                                                                   | Paragraphs 3.4                                                                                          |                                   |                                          |
|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---|---|---|---|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-----------------------------------|------------------------------------------|
| Indicators                                                                                           | Importance of Indicator*<br>(A)                                             |   |   |   |   |   | Extent to which the assessment requirements are met<br>(B)                                                                                                          |                                                                                                                                                                  |                                                                            |                                                                          |                                                                                                   |                                                                                                         | Total Points<br>Obtained<br>(A*B) | Maximum<br>Points<br>Obtainable<br>(A)*5 |
|                                                                                                      | 0                                                                           | 1 | 2 | 3 | 4 | 5 | 0<br>Totally Unacceptable #                                                                                                                                         | 1<br>Unsatisfactory #                                                                                                                                            | 2<br>Reasonable with<br>Shortcomings                                       | 3<br>Acceptable                                                          | 4<br>Good                                                                                         | 5<br>Exceptional                                                                                        |                                   |                                          |
| 1) The likely effect on the water level<br>by the proposed use on:                                   |                                                                             |   |   |   |   |   | The proposed use will<br>cause an unacceptable<br>change in water levels<br>on a regional scale                                                                     | There is an unacceptable<br>change in water levels<br>on a local scale                                                                                           | There is an impact<br>on water levels                                      | There is an acceptable<br>impact on water levels                         | The change in water<br>levels on a local scale<br>is such that the effects<br>are not significant | The change in water<br>levels on a regional<br>scale is such that the<br>effects are not<br>significant |                                   |                                          |
| Surface Water<br>Ground Water                                                                        |                                                                             |   |   |   |   |   |                                                                                                                                                                     |                                                                                                                                                                  |                                                                            |                                                                          |                                                                                                   |                                                                                                         |                                   |                                          |
| 2) The likely effect on the presence and<br>concentrations of particular substances in<br>the water: |                                                                             |   |   |   |   |   | The proposed use will<br>cause an unacceptable<br>increase in the presence<br>and concentrations of<br>particular substances in<br>the water on a regional<br>scale | The proposed use will<br>cause an unacceptable<br>increase in the presence<br>and concentrations of<br>particular substances in<br>the water on a local<br>scale | Levels of<br>particular<br>substances could<br>be affected                 | Present acceptable levels<br>of particular substance<br>are not affected | Possible decrease in<br>concentration levels of<br>particular substances<br>on a local scale      | Possible decrease in<br>concentration levels of<br>particular substances on<br>a regional scale         |                                   |                                          |
| 3) The likely effect of the proposed use<br>on the instream and riparian habitats<br>in respect of:  |                                                                             |   |   |   |   |   | The proposed use will<br>cause an unacceptable<br>hazard to the instream<br>and riparian habitats<br>with negative impacts on<br>a regional scale                   | There is an unacceptable<br>hazard to the instream<br>and riparian habitats<br>with negative impacts on<br>a local scale                                         | There is a tolerable<br>impact on the<br>instream and<br>riparian habitats | There is a positive<br>impact on the instream<br>and riparian habitats   | Instream and riparian<br>habitats could improve<br>on a local scale                               | Instream and riparian<br>habitats could improve<br>on a regional scale                                  |                                   |                                          |
| Water Quantity<br>Water Quality                                                                      |                                                                             |   |   |   |   |   |                                                                                                                                                                     |                                                                                                                                                                  |                                                                            |                                                                          |                                                                                                   |                                                                                                         |                                   |                                          |

0: Not applicable at all

1: Not really applicable

2: Applicable with shortcomings

3: Applicable requirement

4: Important requirement

5: Critically important requirement

All unacceptable and unsatisfactory indicators must be managed to reflect a reasonable impact or a better one.

If this cannot be achieved a full motivation must be supplied if a license is still to be issued.

SUB-TOTAL 27(1)ies

Name of Applicant:

Reference No:

| ASSESSMENT OF WATER USE LICENSE APPLICATIONS IN TERMS OF THE NATIONAL WATER ACT, Act No 36 of 1998.             |                                  |   |   |   |   |   |                                                                                                                                                       |                                                                                                                                 |                                                                                       |                                                                                     |                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------|----------------------------------|---|---|---|---|---|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| THE CATCHMENT MANAGEMENT STRATEGY APPLICABLE TO THE RELEVANT WATER RESOURCE.                                    |                                  |   |   |   |   |   |                                                                                                                                                       |                                                                                                                                 |                                                                                       |                                                                                     |                                                                                                               |
| Paragraph 3.4                                                                                                   |                                  |   |   |   |   |   |                                                                                                                                                       |                                                                                                                                 |                                                                                       |                                                                                     |                                                                                                               |
| Indicators                                                                                                      | Importance of Indicators*<br>(A) |   |   |   |   |   | Extent to which the assessment requirements are met<br>(B)                                                                                            |                                                                                                                                 |                                                                                       |                                                                                     |                                                                                                               |
|                                                                                                                 | 0                                | 1 | 2 | 3 | 4 | 5 | 0<br>Totally Unacceptable #                                                                                                                           | 1<br>Unsatisfactory #                                                                                                           | 2<br>Reasonable with<br>Shortcomings                                                  | 3<br>Acceptable                                                                     | 4<br>Good                                                                                                     |
| 4) The likely effect of the proposed use on the characteristics and distribution of aquatic biota in respect of |                                  |   |   |   |   |   | The proposed use will cause an unacceptable hazard to the characteristics and distribution of aquatic biota with negative effects on a regional scale | There is an unacceptable hazard to the characteristics and distribution of aquatic biota with negative effects on a local scale | There is a noticeable impact on the characteristics and distribution of aquatic biota | There is a positive impact on the characteristics and distribution of aquatic biota | There is a possible positive effect on the characteristics and distribution of aquatic biota on a local scale |
| Water Quantity<br>Water Quality                                                                                 |                                  |   |   |   |   |   |                                                                                                                                                       |                                                                                                                                 |                                                                                       |                                                                                     |                                                                                                               |
| 5) The likely effect of the proposed use on sediment loads                                                      |                                  |   |   |   |   |   | There is an unacceptable increase in sediment loads on a regional scale                                                                               | There is an unacceptable increase in sediment loads on a local scale                                                            | There is an impact on the sediment loads with a possible increase in sediment loads   | The impact on sediment loads is acceptable                                          | There is a significant positive effect on sediment loads with a possible decrease on a local scale            |
| 6) The likely effect of return flows emanating from the proposed use                                            |                                  |   |   |   |   |   | Return flows will have an unacceptable effect with a decline in water quality on a regional scale                                                     | Return flows will have an unacceptable effect with a decline in water quality on a local scale                                  | Return flows will have an impact on water quality                                     | Return flows will have an acceptable impact on water quality                        | Return flows will have a positive effect with an improvement in water quality on a local scale                |

0 Not applicable at all

1 Not really applicable

2 Applicable with shortcomings

3 Applicable requirement

4 Important requirement

5 Critically important requirement

All unacceptable and unsatisfactory indicators must be managed to reflect a reasonable impact or a better one.

If this cannot be achieved a full motivation must be supplied if a license is still to be issued.

SUB-TOTAL 27(100)

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Name of Applicant:

Reference No.:

| ASSESSMENT OF WATER USE LICENSE APPLICATIONS IN TERMS OF THE NATIONAL WATER ACT, Act NO 36 of 1998.                                                                                                    |  |                                                                             |   |   |   |   |                                                            |                                                                           |                                                                            |                                                                                                 |                                                                     |                                                                  |                                                                    |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------|---|---|---|---|------------------------------------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------------------------|--------------------------------------------------------------------|--|
| CONSIDERATION                                                                                                                                                                                          |  | THE CATCHMENT MANAGEMENT STRATEGY APPLICABLE TO THE RELEVANT WATER RESOURCE |   |   |   |   |                                                            |                                                                           |                                                                            |                                                                                                 |                                                                     | Paragraphs 3.4                                                   |                                                                    |  |
| Indicators                                                                                                                                                                                             |  | Importance of Indicator*<br>(A)                                             |   |   |   |   | Extent to which the assessment requirements are met<br>(B) |                                                                           |                                                                            |                                                                                                 |                                                                     | Total Points<br>Obtained<br>(A)*(B)                              | Maximum<br>Points<br>Obtainable<br>(A)*5                           |  |
|                                                                                                                                                                                                        |  | 0                                                                           | 1 | 2 | 3 | 4 | 5                                                          | 0<br>Totally Unacceptable #                                               | 1<br>Unsatisfactory #                                                      | 2<br>Reasonable with<br>Shortcomings                                                            | 3<br>Acceptable                                                     | 4<br>Good                                                        | 5<br>Exceptional                                                   |  |
| 7. The extent to which the proposed use complies with water standards [Section 26(1)(b) of National standards in terms of the Water Services Act, 1997 [Section 6(1)(a)(ii) of the National Water Act] |  |                                                                             |   |   |   |   |                                                            | The proposed use does not comply with any of set standards                | The proposed use does not comply fully with the all set standards          | The proposed use will have to be strictly monitored to ensure compliance with the set standards | The proposed use is acceptable as it will satisfy the set standards | The proposed use will easily satisfy the set standards           | The proposed use will always comply with the set standards         |  |
| 8. The impact of the water to be discharged will have on the resource to which it will be returned [Section 22(2)(e) National Water Act]                                                               |  |                                                                             |   |   |   |   |                                                            | The discharge water will have a long term negative effect on the resource | The discharge water will have a short term negative effect on the resource | The discharged water could effect the resource depending on the current status of the system    | The discharge water will not affect the resource                    | The discharge water may result in an improvement in the resource | The discharge water will result in an improvement in the resource. |  |

0- Not applicable at all

1- Not really applicable

2- Applicable with shortcomings

3- Applicable requirement

4- Important requirement

5- Critically important requirement

All unacceptable and unsatisfactory indicators must be managed to reflect a reasonable impact or a better one.

If this cannot be achieved a full motivation must be supplied if a license is still to be issued.

SUB-TOTAL 27(1)(e)

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|  | % |



Name of Applicant

Reference No.

| ASSESSMENT OF WATER USE LICENSE APPLICATIONS IN TERMS OF THE NATIONAL WATER ACT, Act No 36 of 1998                                         |                                                                             |   |   |   |   |   |                                                                               |                                                                                          |                                                                                                |                                                                                                            |                                                                                                           |                                                                                                       |                                |                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---|---|---|---|---|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------------|
| CONSIDERATION                                                                                                                              | THE CATCHMENT MANAGEMENT STRATEGY APPLICABLE TO THE RELEVANT WATER RESOURCE |   |   |   |   |   |                                                                               |                                                                                          |                                                                                                |                                                                                                            |                                                                                                           | Paragraphs 3.15                                                                                       |                                |                                 |
| Indicators                                                                                                                                 | Importance of Indicator* (A)                                                |   |   |   |   |   | Extent to which the assessment requirements are met (B)                       |                                                                                          |                                                                                                |                                                                                                            |                                                                                                           |                                                                                                       | Total Points Obtained (A)*5(B) | Maximum Points Obtainable (A)*5 |
|                                                                                                                                            | 0                                                                           | 1 | 2 | 3 | 4 | 5 | 0<br>Totally Unacceptable #                                                   | 1<br>Unsatisfactory #                                                                    | 2<br>Reasonable with Shortcomings                                                              | 3<br>Acceptable                                                                                            | 4<br>Good                                                                                                 | 5<br>Exceptional                                                                                      |                                |                                 |
| (1) The extent to which the net present value of the investment already made by applicant will be prejudiced if the application is refused |                                                                             |   |   |   |   |   | The applicant's current investment will benefit if the application is refused | The applicant's current investment will benefit marginally if the application is refused | The applicant's current investment will be marginally prejudiced if the application is refused | It would not affect the continued existence of the applicant's undertaking that the application be granted | It is important to the continued existence of the applicant's undertaking that the application be granted | It is vital to the continued existence of the applicant's undertaking that the application be granted |                                |                                 |
|                                                                                                                                            |                                                                             |   |   |   |   |   |                                                                               |                                                                                          |                                                                                                |                                                                                                            |                                                                                                           |                                                                                                       |                                |                                 |
|                                                                                                                                            |                                                                             |   |   |   |   |   |                                                                               |                                                                                          |                                                                                                |                                                                                                            |                                                                                                           |                                                                                                       |                                |                                 |

0 Not applicable at all

1 Not really applicable

2 Applicable with shortcomings

3 Applicable requirement

4 Important requirement

5 Critically important requirement

All unacceptable and unsatisfactory indicators must be managed so reflect a reasonable impact or a better one.  
If this cannot be achieved a full motivation must be supplied if a license is still to be issued.

SUB-TOTAL 27/1000

 %

Name of Applicant:

Reference No.:

| ASSESSMENT OF WATER USE LICENSE APPLICATIONS IN TERMS OF THE NATIONAL WATER ACT, Act NO 36 of 1998. |                              |                                                                              |   |   |   |   |                                                                                                                                               |                                                                                                         |                                                                                                               |                                                                                                                                  |                                                                                                                                    |                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------|------------------------------|------------------------------------------------------------------------------|---|---|---|---|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| CONSIDERATION                                                                                       |                              | THE CATCHMENT MANAGEMENT STRATEGY APPLICABLE TO THE RELEVANT WATER RESOURCE. |   |   |   |   |                                                                                                                                               |                                                                                                         |                                                                                                               |                                                                                                                                  |                                                                                                                                    | Paragraphs 3.1 and 3.8                                                                                                                      |
| Indicators                                                                                          | Importance of Indicator* (A) |                                                                              |   |   |   |   | Extent to which the assessment requirements are met (B)                                                                                       |                                                                                                         |                                                                                                               |                                                                                                                                  |                                                                                                                                    |                                                                                                                                             |
|                                                                                                     | 0                            | 1                                                                            | 2 | 3 | 4 | 5 | 0<br>Totally Unacceptable #                                                                                                                   | 1<br>Unsatisfactory #                                                                                   | 2<br>Reasonable with Shortcomings                                                                             | 3<br>Acceptable                                                                                                                  | 4<br>Good                                                                                                                          | 5<br>Exceptional                                                                                                                            |
| 1: The match between the proposed water use and the local Integrated Development Plan               |                              |                                                                              |   |   |   |   | There is a totally unacceptable clash between the proposed water use and the local Integrated Development Plan with negative effects expected | There is an unacceptable clash between the proposed water use and the local Integrated Development Plan | There is a match between proposed water use and the local Integrated Development Plan, with some shortcomings | There is an acceptable match between proposed water use and the local Integrated Development Plan with possible effects expected | There is a good match between proposed water use and the local Integrated Development Plan with possible positive effects expected | There is an excellent match between proposed water use and the local Integrated Development Plan with large scale positive effects expected |
| 2: The impact of the proposed use on the National or Regional GDP                                   |                              |                                                                              |   |   |   |   | There will be a totally unacceptable negative impact on the GDP                                                                               | There will be a negative impact on the GDP                                                              | There will be minor improvement on the GDP, but a few negative side effects may occur                         | There will be an acceptable impact on the GDP                                                                                    | There will be a positive impact with possible benefits to the GDP                                                                  | There will be a positive impact with definite benefits to the GDP                                                                           |
| 3: The type of undertaking envisaged                                                                |                              |                                                                              |   |   |   |   | The proposed undertaking is of no strategic importance at any level                                                                           | The proposed undertaking is of minimal strategic importance                                             | The proposed undertaking has minor strategic importance                                                       | The proposed undertaking is of some strategic importance                                                                         | The proposed undertaking is of strategic importance at a local scale                                                               | The proposed undertaking is of vital strategic importance at a local and even a regional scale                                              |
| 4: Overseas and local contractual obligations                                                       |                              |                                                                              |   |   |   |   | The undertaking has absolutely no potential to develop local or overseas contractual obligations                                              | The undertaking has no local or overseas contractual obligations                                        | The undertaking has the potential to develop local contractual obligations                                    | The undertaking has local contractual obligations and has the potential to expand overseas                                       | The undertaking has local and overseas contractual obligations                                                                     | The undertaking has large scale local and overseas contractual obligations                                                                  |

- 0: Not applicable at all  
 1: Not really applicable  
 2: Applicable with shortcomings  
 3: Applicable requirement  
 4: Important requirement  
 5: Critically important requirement

All unacceptable and unsatisfactory indicators must be managed to reflect a reasonable impact or a better one. If this cannot be achieved a full motivation must be supplied if a license is still to be issued.

SUB-TOTAL 25/100



%

Name of Applicant

Reference No.

| ASSESSMENT OF WATER USE LICENSE APPLICATIONS IN TERMS OF THE NATIONAL WATER ACT, NO 36 of 1998   |                                              |   |   |   |   |   |                                                                                                          |                                                                                                 |                                                   |                                                              |                                                                        |                                                                       |                                     |
|--------------------------------------------------------------------------------------------------|----------------------------------------------|---|---|---|---|---|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------|-------------------------------------|
| THE CAPTURED MANAGEMENT STRATEGY APPLICABLE TO THE RELEVANT WATER RESOURCE                       |                                              |   |   |   |   |   |                                                                                                          |                                                                                                 |                                                   |                                                              |                                                                        |                                                                       |                                     |
| Paragraph 3.1                                                                                    |                                              |   |   |   |   |   |                                                                                                          |                                                                                                 |                                                   |                                                              |                                                                        |                                                                       |                                     |
| Indicators                                                                                       | Importance of Indicators <sup>1</sup><br>(A) |   |   |   |   |   | Extent to which the assessment requirements are met<br>(B)                                               |                                                                                                 |                                                   |                                                              |                                                                        |                                                                       | Total Points<br>Obtained<br>(A)*(B) |
|                                                                                                  | 0                                            | 1 | 2 | 3 | 4 | 5 | 0<br>Totally Unacceptable #                                                                              | 1<br>Unsatisfactory #                                                                           | 2<br>Reasonable with<br>Shortcomings              | 3<br>Acceptable                                              | 4<br>Good                                                              | 5<br>Exceptional                                                      |                                     |
| 1- The likely effect of the proposed use on the Reserve for basic human needs in respect of:     |                                              |   |   |   |   |   | There will be an totally unacceptable negative impact on the human reserve with irreversible effects     | There will be an unacceptable negative impact on the human reserve with short term effects      | There will be an impact on the human reserve      | There will be an acceptable impact on the human reserve      | The proposed use could have positive impacts on the human reserve      | The proposed use will have positive impacts on the human reserve      |                                     |
| Water quantity<br>Water quality                                                                  |                                              |   |   |   |   |   |                                                                                                          |                                                                                                 |                                                   |                                                              |                                                                        |                                                                       |                                     |
| 2- The likely effect on the proposed use on the reserve for the aquatic ecosystem in respect of: |                                              |   |   |   |   |   | There will be a totally unacceptable negative impact on the ecological reserve with irreversible effects | There will be an unacceptable negative impact on the ecological reserve with short term effects | There will be an impact on the ecological reserve | There will be an acceptable impact on the ecological reserve | The proposed use could have positive impacts on the ecological reserve | The proposed use will have positive impacts on the ecological reserve |                                     |
| Water quantity<br>Water quality                                                                  |                                              |   |   |   |   |   |                                                                                                          |                                                                                                 |                                                   |                                                              |                                                                        |                                                                       |                                     |

0: Not applicable at all

1: Not really applicable

2: Applicable with shortcomings

3: Applicable requirement

4: Important requirement

5: Critically important requirement

All unacceptable and unsatisfactory indicators must be managed to reflect a reasonable impact or a better one.  
If this cannot be achieved a full motivation must be supplied if a license is still to be issued.

SUB-TOTAL 23(06)

 %

Name of Applicant:

Reference No:

| ASSESSMENT OF WATER USE LICENSE APPLICATIONS IN TERMS OF THE NATIONAL WATER ACT, Act NO 36 of 1998.                       |  |                                                                                                                        |   |   |   |   |                                                            |                                                                                                                                                              |                                                                                                            |                                                                                               |                                                                                                          |                                                                                                             |                                                                                                |  |
|---------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------|---|---|---|---|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--|
| CONSIDERATION                                                                                                             |  | THE CATCHMENT MANAGEMENT STRATEGY APPLICABLE TO THE RELEVANT WATER RESOURCE.<br>National Water Act – Section 27 (f)(i) |   |   |   |   |                                                            |                                                                                                                                                              |                                                                                                            |                                                                                               |                                                                                                          | Paragraphs 3.3                                                                                              |                                                                                                |  |
| Indicators                                                                                                                |  | Importance of Indicator <sup>a</sup><br>(A)                                                                            |   |   |   |   | Extent to which the assessment requirements are met<br>(B) |                                                                                                                                                              |                                                                                                            |                                                                                               |                                                                                                          | Total Points<br>Obtained<br>(A* <sup>a</sup> B)                                                             | Maximum<br>Points<br>Obtainable<br>(A*5)                                                       |  |
|                                                                                                                           |  | 0                                                                                                                      | 1 | 2 | 3 | 4 | 5                                                          | 0<br>Totally Unacceptable #                                                                                                                                  | 1<br>Unsatisfactory #                                                                                      | 2<br>Reasonable with<br>Shortcomings                                                          | 3<br>Acceptable                                                                                          | 4<br>Good                                                                                                   | 5<br>Exceptional                                                                               |  |
| 3) The likely effect of the proposed use on the quantity and quality of water available to meet international obligations |  |                                                                                                                        |   |   |   |   |                                                            | The proposed use will have an unacceptable impact on the water available to meet international obligations with large scale negative impacts in their region | The proposed use will have an unacceptable impact on the water available to meet international obligations | The proposed use will have an impact on the water available to meet international obligations | The proposed use will have an acceptable impact on the water available to meet international obligations | The proposed use will have an imperceptible impact on the water available to meet international obligations | The proposed use will have no impacts on the water available to meet international obligations |  |
| Water quantity<br>Water quality                                                                                           |  |                                                                                                                        |   |   |   |   |                                                            |                                                                                                                                                              |                                                                                                            |                                                                                               |                                                                                                          |                                                                                                             |                                                                                                |  |
| 4) The anticipated effect of the proposed use on the instream flow with respect to                                        |  |                                                                                                                        |   |   |   |   |                                                            | The anticipated effect on the instream flow is unacceptable with negative impacts on a regional scale                                                        | The anticipated effect on the instream flow is unacceptable with negative impacts on a local scale         | There is an impact on instream flow requirements                                              | There is an acceptable impact on instream flow requirements                                              | There is a significant positive effect on the instream flow on a local scale                                | There is a significant positive effect on the instream flow on a regional scale                |  |
| Water quantity<br>Water quality                                                                                           |  |                                                                                                                        |   |   |   |   |                                                            |                                                                                                                                                              |                                                                                                            |                                                                                               |                                                                                                          |                                                                                                             |                                                                                                |  |

- 0: Not applicable at all  
1: Not really applicable  
2: Applicable with shortcomings  
3: Applicable requirement  
4: Important requirement  
5: Critically important requirement

All unacceptable and unsatisfactory indicators must be managed to reflect a reasonable impact or a better one.  
If this cannot be achieved a full motivation must be supplied if a license is still to be issued.

SUB-TOTAL 270100

|  |   |
|--|---|
|  |   |
|  | % |

Name of Applicant:

Reference No:

| ASSESSMENT OF WATER USE LICENSE APPLICATIONS IN TERMS OF THE NATIONAL WATER ACT, Act No 36 of 1998.   |                              |                                                                             |   |   |   |   |                                                                                                                                                         |                                                                                       |                                                                         |                                                                                   |                                                                                                                                       |                                                                                                                                                    |  |  |
|-------------------------------------------------------------------------------------------------------|------------------------------|-----------------------------------------------------------------------------|---|---|---|---|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| CONSIDERATION                                                                                         |                              | THE CATCHMENT MANAGEMENT STRATEGY APPLICABLE TO THE RELEVANT WATER RESOURCE |   |   |   |   |                                                                                                                                                         |                                                                                       |                                                                         |                                                                                   |                                                                                                                                       |                                                                                                                                                    |  |  |
|                                                                                                       |                              | Paragraphs 3.11 and 3.13                                                    |   |   |   |   |                                                                                                                                                         |                                                                                       |                                                                         |                                                                                   |                                                                                                                                       |                                                                                                                                                    |  |  |
| Indicators                                                                                            | Importance of Indicator* (A) |                                                                             |   |   |   |   | Extent to which the assessment requirements are met (B)                                                                                                 |                                                                                       |                                                                         |                                                                                   | Total Points Obtained (A+B)                                                                                                           | Maximum Points Obtainable (A+B)                                                                                                                    |  |  |
|                                                                                                       | 0                            | 1                                                                           | 2 | 3 | 4 | 5 | 0                                                                                                                                                       | 1                                                                                     | 2                                                                       | 3                                                                                 | 4                                                                                                                                     | 5                                                                                                                                                  |  |  |
|                                                                                                       |                              |                                                                             |   |   |   |   | Totally Unacceptable #                                                                                                                                  | Unsatisfactory #                                                                      | Reasonable with Shortcomings                                            | Acceptable                                                                        | Good                                                                                                                                  | Exceptional                                                                                                                                        |  |  |
| 1- The level of efficiency of the proposed water use (Section 22(2)(d))                               |                              |                                                                             |   |   |   |   | The level of efficiency of the proposed water use is totally unacceptable and water will actually be wasted. Efficiency issues have not been addressed. | The level of efficiency of the proposed use is unacceptable and it must be improved.  | The level of efficiency of the proposed water use can be improved.      | The level of efficiency of the proposed use is acceptable.                        | Efficiency levels of the proposed water use are high and a management programme is in place.                                          | Efficiency levels of the proposed water use are high and a management programme is in place in addition to the latest technologies being utilised. |  |  |
| Water quantity<br>Water quality                                                                       |                              |                                                                             |   |   |   |   |                                                                                                                                                         |                                                                                       |                                                                         |                                                                                   |                                                                                                                                       |                                                                                                                                                    |  |  |
| 2- The effect of the proposed use on demand management / conservation programme (if in place) on the: |                              |                                                                             |   |   |   |   | There is an unacceptable negative impact on demand management and/or conservation programme.                                                            | There is an unacceptable impact on demand management and / or conservation programme. | There is an impact on demand management and/or conservation programmes. | There is an acceptable impact on demand management and/or conservation programme. | There is a positive impact on demand management and/or conservation programmes with a possible improvement in the existing situation. | There is a positive impact on demand management and / or conservation programmes with a definite improvement in the existing situation.            |  |  |
| Water quantity<br>Water quality                                                                       |                              |                                                                             |   |   |   |   |                                                                                                                                                         |                                                                                       |                                                                         |                                                                                   |                                                                                                                                       |                                                                                                                                                    |  |  |



## *APPENDIX 6*

### *CAPACITY BUILDING RELATING SPECIFICALLY TO THE PROJECT ON THE FACILITATION OF TRADE IN WATER USE ENTITLEMENTS BY THE NATIONAL WATER ACT IN SOUTH AFRICA*

Regarding the project "Investigation of the supportive role of the market mechanism in order to achieve efficient and equitable water utilisation", Mr Mosaka and Ms Parkies were actively involved, and the project has broadened their expertise in the field of research on applied economics. Ms Parkies who was pursuing a B.Com (Honours) in economics at UNISA gained valuable experience by participating in this project with regard to research methodology and resource economics in general.

Mr Mosaka has participated in numerous research projects commissioned by the Water Research Commission (WRC) in determining the economic value of water, water resource accounts and cost-benefit analysis with regard to water related projects. Due to his vast experience, Mr. Mosaka, has added value specifically to aspects such as project management, literature survey, report writing and research methodology regarding this project. Mr. Mosaka's current involvement in a WRC project entitled "Investigation of establishing small scale farmers and tenure systems in long term viable conditions" has had a snowball effect on the project on water markets.

Mr. Mosaka who is currently a Senior Economist at Conningarth contributed his knowledge of institutional matters such as the New Water Act, WUA, which he gained by participating in the small-scale farmer's project to this project. With regard to his participation in this particular project, Mr. Mosaka gained valuable insight in the functioning of both local and international water markets. Mr. Mosaka had the opportunity to attend a lecture by Dr. Henning Bjornlund from Australia who presented an in-depth overview of the Australian water market experiences. Dr. Bjornlund's lecture focused on the following issues in respect of the functioning of water markets in Australia:

- Emergence of water trade in Australia
- The drive for an exchange
- Drivers for water trade
- Seven categories of market drivers
- Risk Management
- Cost and financial issues
- Administrative issues

Special mention must be made of Ms. Parkies's inputs to the project. She participated actively in the following:

- **Planning and organisation**

Ms. Parkies participated in the planning process of the project. She assisted in developing the questionnaires and in identifying stakeholders, to whom the questionnaires were submitted.

- **Literature Surveys**

Ms Parkies participated actively in collecting some of the literature which was used as a "start-up" of the project, she compiled a document that served to assist the team members to start the report. From this action she gained knowledge on how to collect and interpret data and do report writing.

- **Administration of the project**

Ms Parkies took the initiative when it came to the administration of the project. She efficiently kept record of all the documentation and files related to the project, assisted in the typing and editing and also incorporated some of the comments in the report. She was responsible for sending out and receiving project reports, comments and queries.

- **Interaction with stakeholders**

Ms. Parkies conducted telephonic and personal interviews with various stakeholders. With this task she acquired the ability to interact with all levels of the internal and external stakeholders. She proved to have good communication skills.

- **Writing of the minutes and progress reports**

Ms. Parkies was very much involved with the writing of the minutes of the steering committee meetings. She also assisted with the writing of progress reports. She gained experience on the writing of minutes, preparation of progress reports and determining meeting deadlines.



- **Workshop**

Ms Parkies was the co-ordinator of the workshop in Cape Town, she organised the venue, prepared the agenda for the meeting and took the minutes at the meeting. She was also responsible for the invitations to the stakeholders in Cape Town. For names of stakeholders in Cape Town (See Annexure 2)

- **Academic Contribution**

This project broadened Ms. Parkies' knowledge in research methodology, resource economics and the conduct of qualitative research, she was to a large extent exposed to activities involving quantitative research.

Conningarth has been at the forefront of capacity building with regard to water related projects commissioned by WRC. For instance, the company provided capacity building to students such as Mr Stanley Yokwe and Mr Njokweni Ntsonto on aspects pertaining to water related disciplines that formed part of their thesis for their Master's degrees. These disciplines involve determining the economic value of water as well as statistical analysis pertaining to their work on water related projects. Mr Phindile Mapekula was recently appointed on the student scheme. Ms Parkies is currently employed at the gambling board as a financial analyst.

## Other related WRC reports available:

### An economic analysis of surface irrigation water rights transfers in selected areas of South Africa

*RM Armitage*

The agricultural sector, which consumes the most water in South Africa, is regarded as the primary source to meet demand through water savings. Despite this rationalisation of water use in agriculture, irrigated agriculture will have to maintain and improve productivity to meet growing food demand in future. This will require an enabling environment that allocates irrigation water optimally. Water marketing is one such mechanism that can allocate water to its highest valued use in an efficient and flexible manner.

This research entails a detailed evaluation of the policy scenario of water market allocation and identifies the general criteria for a well-functioning market, efficiency advantages of market allocation, and potential constraints to market establishment and operation. A literature review of water markets in a number of countries identifies the procedural requirements for water markets in each situation. The research also highlights the facilitating institutional arrangements and benefits from market trades of "outer land" water rights along the Lower Orange River, as well as the potential for and necessary institutional changes to facilitate tradable water rights along the Mhlatuze River. The new Water Law principles are briefly evaluated and their possible effects on irrigation farmers are assessed. Finally, the study attempts to deal with the issue of how water-use licenses will be quantified. However, further hydrological research into this topic in each river catchment is necessary to identify the method in which the water allocation to irrigated agriculture and individual irrigators will be determined.

**Report Number: 870/1/99**

**ISBN: 1 86845 558 0**

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