



DEPARTMENT OF WATER AFFAIRS AND FORESTRY

MZIMVUBU TO KEISKAMMA WATER MANAGEMENT AREA

MZIMVUBU-MBASHE ISP AREA

Internal Strategic Perspective

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UMVOTO

FEBRUARY 2005



DEPARTMENT OF WATER AFFAIRS AND FORESTRY
DIRECTORATE NATIONAL WATER RESOURCE PLANNING

MZIMVUBU TO KEISKAMMA WATER MANAGEMENT AREA 12

INTERNAL STRATEGIC PERSPECTIVE
OF
MZIMVUBU TO MBASHE ISP AREA

VERSION 1

FEBRUARY 2005

DEPARTMENT OF WATER AFFAIRS AND FORESTRY
DIRECTORATE NATIONAL WATER RESOURCE PLANNING

DEVELOPMENT OF INTERNAL STRATEGIC PERSPECTIVE
FOR THE MZIMVUBU TO MBASHE PORTION OF THE
MZIMVUBU TO KEISKAMMA WATER MANAGEMENT AREA 12

APPROVAL

TITLE : INTERNAL STRATEGIC PERSPECTIVE OF THE
MZIMVUBU TO MBASHE ISP AREA

DWAF REPORT NO : P WMA 12/000/00/0305


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Consulting and Umvoto

REPORT STATUS : Version 2: February 2005

VERSION CONTROLLER : Mr T Geldenhuys (DWAF Eastern Cape)

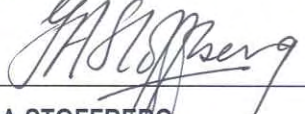
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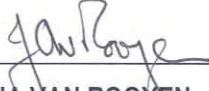
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REFERENCE

This report is to be referred to in bibliographies as:

Department of Water Affairs and Forestry, South Africa. 2005. *Mzimvubu to Keiskamma Water Management Area: Internal Strategic Perspective of the Mzimvubu to Mbashe ISP Area*. Prepared by Ninham Shand, Tlou and Matji, FST Consulting and Umvoto Consortium. DWAF Report No.: **P WMA 12/000/00/0305**

INVITATION TO COMMENT

This report will be updated on a regular basis until the Catchment Management Strategy of the Mzimvubu to Keiskamma Water Management Area eventually supersedes it. Water users and other stakeholders in the Mzimvubu to Mbashe ISP Area and the rest of the WMA, are encouraged to study this report and to submit any comments they may have to the Version Controller (see box).

ELECTRONIC VERSION CONTROL

The report is also available in electronic format as follows:

DWAF website:

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On CD which can be obtained from the DWAF Map Office at:

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or from the Version Controller (see box overleaf).

The CD contains the following reports (all available on the DWAF website):

Mzimvubu to Mbashe ISP Area Internal Strategic Perspective (*this report*) (Report No: P WMA 12/000/00/0305)

Amatole Kei ISP Area Internal Strategic Perspective (Report No. P WMA 12/000/00/0404)

The National Water Resource Strategy, First Edition, 2004

Mzimvubu to Keiskamma WMA: Overview of the Water Resources Availability and Utilisation (Report No: P WMA 12/000/00/0203)

Mzimvubu to Keiskamma WMA: Water Resources Situation Assessment (Report No: P WMA 12/000/00/0101)

LATEST VERSION

This report is a living document and will be updated on a regular basis. If the version of this report is older than 12 months, please check whether a later version is available.

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VERSION CONTROL

MZIMVUBU TO MBASHE ISP AREA

INTERNAL STRATEGIC PERSPECTIVE

Version 1

February 2005

(List of Previous Versions)

(Dates)

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The most significant amendments included in the latest version will be listed below.

EXECUTIVE SUMMARY

The Department of Water Affairs and Forestry (DWAF), as the custodian of South Africa's water resources, wishes to make optimal use of the resources in promoting economic growth and wealth for all its citizens. A clear understanding of the water resources availability and how it is intended that this water be used is essential. This includes strategies and actions regarding all aspects of water resources management in all the nineteen water management areas (WMAs) in the country. This report covers the Department's internal strategic perspective (ISP) of the Mzimvubu to Keiskamma WMA.

The Mzimvubu to Keiskamma WMA has been split into two ISP areas namely the Amatole – Kei ISP area and the Mzimvubu to Mbashe ISP area. The internal strategic perspective for the Mzimvubu to Mbashe ISP area contains strategies and related management actions which address the management of the water resources, taking into account the socio-economic aspects, the environmental conditions of the area and the need to balance these for the benefit of this deeply rural and poorest area of the country. The ISP identifies the constraints and opportunities related to integrated water resource management to ensure resource sustainability. The objective of this ISP is to provide a framework for DWAF's management of the water resources in the area until the Department (Regional Offices) can hand over its management functions to an established CMA. This will ensure consistency when answering requests for new water licences and informing existing water users (including authorities) on how the Department will manage the water resource within the area of concern.

The methodology combined the collection and synthesis of information from the National Water Resource Strategy (NWRS), Water Management Area (WMA) reports, Water Resource Situation Assessment (WRSAs) reports and other catchment study reports on the water resource availability, utilisation and water resource management issues, with interviews with selected key DWAF people, especially from the Eastern Cape Regional Office. The ISP area was further subdivided into four key areas, namely: Mzimvubu, Pondoland, Mtata and Mbashe.

Findings

The extent of water resources development in the ISP area varies considerably. No noteworthy dams have been constructed in the Mzimvubu River catchment, where significant potential for water resource development remains, as also applies to the Mbashe River. The Mtata River is well regulated by the Mtata Dam. Three small hydro-electric developments exist in the ISP area, one on the Mbashe River and two on the Mtata River. An inter-basin water transfer occurs between the Kei and the Mbashe catchments.

The available surface water resources in the Pondoland key area under current development are limited, while there are indications that there is scope for groundwater development to meet the growing domestic water requirements in that key area. In the other key areas, although there is enough surface water resources available to meet likely growth in water requirements, a large number of the rural towns are dependent on groundwater. The quality of the groundwater in the ISP area is good and borehole water requires no treatment. The low borehole success rate may increase the cost of supplying domestic water supply from groundwater.

There are a number of issues, constraints and development opportunities available in the Mzimvubu to

Mbashe ISP area regarding water resource management. The ISP has revealed that with the exception of a few localised areas, all four key areas of Mzimvubu, Pondoland, Mtata and Mbashe have surplus water (see Table 1). The projected future water requirements in the ISP area are not expected to increase significantly. Population figures are expected to reduce somewhat because of migration from the rural areas to the urban areas as well as the high prevalence of HIV/AIDS while significant increases in forestry, irrigation, hydropower generation, etc are unlikely, unless stimulated by practical decisions.

Table 1: Reconciliation of available water with requirements for the year 2000 (million m³/a)

Key area	Available water			Water Requirement			Balance
	Local yield	Transfers in	Total	Local requirements	Transfer out	Total	
Mzimvubu	91	0	91	41	0	41	50
Pondoland	5	0	5	4	0	4	1
Mtata	146	0	146	57	0	57	89
Mbashe	49	102	151	31	0	31	120

The water quality of the ISP area is generally very good with the exception of the urban areas where the existing wastewater treatment works cannot cope with sewage inflow. This ISP area has some of the most pristine estuaries and areas of high ecological importance and sensitivity can be found in the Pondoland key area. However the operation of the existing three hydroelectric schemes has a negative impact on the flow regime required for the ecology.

The utilisation of water in the urban areas was found to be highly inefficient. There are significant water losses in all the urban and rural towns situated in the Mzimvubu to Mbashe ISP area.

On the other hand the Mzimvubu to Mbashe ISP area is deeply rural and very poor and water can contribute to rural development and poverty eradication. The key feature that applies across the Mzimvubu to Mbashe ISP area is that it is well endowed with water. Water alone cannot leverage development and other resources such as human, physical and financial as well as institutional and management support must be available to support such developments. These aspects require integrated resource management.

Therefore the overall objective of water resource management in the Mzimvubu to Mbashe ISP area is the need to utilise the available water for the benefit of local communities in order to improve their welfare, while ensuring that the resource is well protected to ensure the quality of the ecologically highly important and sensitive areas of the ISP area.

Water Resource Management Strategies

Based on the assessment conducted, the following strategies to contribute to poverty eradication and improve the welfare of local communities while protecting the water resource to ensure a high quality ecosystem

function of the ISP area have been put forward:

- ❑ **Water balance and reconciliation strategy:** The DWAF should inform the relevant government departments and the provincial governments of where water is availability of surplus water that can be utilised to improve. It should be noted that water resource development in the Mzimvubu key area should be done in the context that sometime in the future water will be transferred to other areas. Therefore any future developments within the Mzimvubu catchment will be subject to authorisation at national level.
- ❑ **Reserve and Resource Quality Objectives strategy:** Environmental flow assessment for the ISP area should be done within the context of integrated water resource management. There is a need to identify the rivers and estuaries that will require a higher level of water resource protection in order to balance this with the urgent need for rural development to improve the welfare of the communities living in the Mzimvubu to Mbashe ISP area. In order to balance utilisation with resource protection all aspects of the river and drainage system needs to be considered by looking at environmental, economic, social and cultural values in relation to the entire river system.
- ❑ **Water Quality Management:** The water quality of the Mzimvubu to Mbashe ISP area is generally very good. However there are water quality problems in the Mtata River. Priority should be put on the Mtata River which is being severely impacted with the potential of serious health consequences. DWAF needs to ensure pollution control at the source and develop source-directed control measures for the ISP area. DWAF also needs to engage the local authorities and all relevant agencies responsible for water quality problems experienced in the area. Implementation of the dense settlement programme is essential in Mtata and surrounding areas.
- ❑ **Water Conservation and Water Demand Management Strategy:** DWAF should encourage and assist the water services institutions in the ISP area with the development and implementation of WC/WDM measures that include technical, economic and legal instruments to ensure sustainability of the programme particularly in the urban areas, before further sources of supply are made available. This requires the creation of a culture of water conservation and water demand management (WC/WDM) amongst individual users and within all water management and water services institutions.
- ❑ **Forestry Management strategy:** There is potential for forestry development in the Mzimvubu to Mbashe ISP area, particularly in the Mbashe, Mzimvubu and Pondoland key areas. There is sufficient land and water for forestry expansion in the ISP area. Forestry expansion should be balanced with the need for resource protection in the specific river and drainage system of the ISP area.
- ❑ **Poverty eradication, emerging farmers and revitalisation of irrigation schemes:** DWAF has prioritised water for equity, but not at the expense of efficiency and beneficial use. There is a need for close co-operation between DWAF and the PDoA in providing water for resource poor farmers, provided the water is available and allocations have been prioritised.
- ❑ **Co-operative Governance:** There is an urgent need to promote effective management and co-ordination of water resources in the ISP area through co-operation between DWAF, other government departments, local authorities and parastals. DWAF should continue to be actively

involved in the various co-operative management bodies already established and ensure active involvement in new liaison bodies that are being or will be established to contribute towards improved and sustainable water management for the benefit of local communities in particular and society in general.

- ❑ **Monitoring and Information management strategies:** DWAF must ensure that the monitoring of water resources, both quantity and quality, in the Mzimvubu to Mbashe ISP area, with water quality monitoring particularly in the Mtata key area, is conducted. This will require installation of significant new equipment and infrastructure such as weirs and gauging stations and a major increase in staff capacity.

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LIST OF ABBREVIATIONS

amsl	above mean sea level
CCAW	Co-ordinating Committee for Agricultural Water
CMIP	Consolidated Municipal Infrastructure Programme
CMA	Catchment Management Agency
CMS	Catchment Management Strategy
DEAET	Department of Economic, Agriculture, Environment and Tourism
DWAF	Department of Water Affairs and Forestry
DM	District Municipality
DEAT	Department of Environment Affairs and Tourism
ECA	Environmental Conservation Act 73 of 1989
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EFR	Estuarine Freshwater Requirements
EWR	Ecological Water Requirements
GA	General Authorisation
GDP	Gross Domestic Product
GGP	Gross Geographic Product
ISP	Internal Strategic Perspective
IWRM	Integrated Water Resource Management
IDP	Integrated Development Plan
LA	Local Authority
LM	Local Municipality
MAR	Mean Annual Runoff
MC	Management Class
MIG	Municipal Infrastructure Grant
MRBS	Mtata River Basin Study

NWA	National Water Act 36 of 1998
NWRS	National Water Resource Strategy
NEMA	National Environmental Management Act 107 of 1997
NGDB	National Groundwater Data Base
PESC	Present Ecological Status
PGDS	Provincial Growth and Development Strategy
PDOA	Provincial Department of Agriculture
RO	Regional Office
RQO	Resource Quality Objectives
RDM	Resource Directed Measures
ROD	Record of Decision
SWCA	Subterranean Water Control Area
SDI	Spatial Development Initiative
SFRA	Streamflow Reduction Activity
STW	Sewage Treatment Works
SEA	Strategic Environmental Assessment
WMA	Water Management Area
WSDP	Water Services Development Plan
WTW	Water Treatment Works
WwTW	Wastewater Treatment Works
WMI	Water Management Institution
WC/WDM	Water Conservation and Water Demand Management
WSA	Water Services Act 108 of 1997
WUA	Water User Association
WSA	Water Services Authority
WSP	Water Services Provider

GLOSSARY OF TERMS

Aquifer	A Stratum or Zone below the surface of the earth capable of producing water.
Assessment (Water Resources Assessment)	An examination of the aspects of the supply and demand for water and of the factors affecting the management of water.
Assurance of Supply	The reliability of which a specified quantity of water can be provided, usually expressed either as a percentage or as a risk. For example "98% reliability" means that over a long period of time, the specified quantity of water can be supplied for 98% of the time, and less for the remaining 2%. Alternatively, this situation may be described as a "1 in 50 year risk of failure" meaning that, on average, the specified quantity of water will not fail to be provided in 1 year in 50 years, or 2% of the time.
Basin	The area of land that is drained by a large river, or river system.
Biota	A collective term for all the organisms (plants, animals, fungi, bacteria) in an ecosystem.
Catchment	The area of land drained by a river. The term can be applied to a stream, a tributary of a larger river or a whole river system.
Comprehensive water resources management	Water resources planning, development, and control that incorporates physical, social, economic and environmental interdependencies.
Cost Recovery	Fee structures that cover the cost of providing the service or investment.
Condensed Area	The equivalent area of invasive alien plants with a maximum concentration / density that represents the more sparsely distributed invasive alien plants that occur over a large area.
Ecological Category	Ecological Category (A-D). A class indicating the ecological importance and sensitivity of an area, as it is likely to have been under natural (undeveloped) conditions and the risks of disturbance that should be tolerated. Values range from Category A (highly sensitive, no risks allowed) to category D (resilient systems, large risk allowed).
Water Demand Management	The use of price, quantitative restrictions, and other devices to limit the demand for water.
Drainage Region	The drainage regions referred to in this document are either single large

	river basins, or groups of contiguous catchments or smaller catchments with similar hydrological characteristics. They follow the division of the country into drainage regions as used by the Department of Water Affairs and Forestry.
Ecosystem	A complex system formed by the interaction of a community of organisms with its environment.
Ecosystem health	An ecosystem is considered healthy if it is active and maintains its organisations and autonomy over time, and is resilient to stress. Ecosystem health is closely related to the idea of sustainability.
Ecological importance	A measure of the extent to which a particular species, population or process contributes towards the healthy functioning of an ecosystem. Important aspects include habitat diversity, biodiversity, the presence of unique, rare or endangered biota or landscapes, connectivity, sensitivity and resilience. The functioning of the ecosystem refers to the natural processes.
Edaphic	Pertaining to the influence of soil on organisms, or resulting from or influenced by factors inherent in soil rather than by climatic factors.
Endemic	Occurring within a specified locality; not introduced.
Endoreic	Portion of a hydrological catchment that does not contribute towards river flow in its own catchment (local) or to a river flow in downstream catchments (global). In such catchments the water generally drains to pans where much of the water is lost through evaporation.
Ephemeral rivers	Rivers where no flow occurs for long periods.
Historical Flow Sequence	A record of river flow over a defined period and under a defined condition of catchment development in the past, calculated from a record of observed flow corrected for inaccuracies, or from records of observed rainfall, or a combination of the two.
Hydrological year	The twelve-month period from the beginning of October in one year to the end of September in the following year.
Irrigation quota	The quantity of water usually expressed as m ³ /ha per year, or mm per year, allocated to land scheduled under the scheme. This is the quantity to which the owner of the land is entitled at the point at which he or she takes delivery of the water and does not include conveyance losses to that point.
Mean Annual Runoff	Frequently abbreviated to MAR, this is the long-term mean annual flow

	calculated for a specified period of time, at a particular point along a river and for a particular catchment and catchment development condition. In this report, the MARs are based on the 70-year period October 1920 to September 1990 inclusive.
Opportunity cost	The value of goods or services foregone, including environmental goods and services, when a scarce resource is used for one purpose instead of for its next best alternative use.
Opportunistic irrigation	Irrigation from run-of-river flow, farm dams, or compensation flows released from major dams. As storage is not provided to compensate for reduced water availability in dry years, areas irrigated generally have to be reduced in dry years.
Poverty Gap	The sum of the differences between the income of each household and the poverty line. This measure is important since it indicates the theoretical minimum government transfer that is required to poor households to totally eliminate poverty. It also indicates the amount of income generating opportunities for poor people that needs to be created with the capacity to use the opportunities.
Present Ecological Status Class	A Class indicating the degree to which present conditions of an area have been modified from natural (undeveloped) conditions. Factors that are considered in the classification include the extent of flow modification, inundation, water quality, streambed condition, riparian condition and proportion of exotic biota. Values range from Class A (largely natural) to Class F (critically modified).
Quaternary Catchment	The basic unit of area resolution used in the WR90 series of reports published by the Water Research Commission and also in this report. The primary drainage regions are divided into secondary, tertiary and quaternary catchments. The quaternary catchments have been created to have similar mean annual runoffs: the greater the runoff volume the smaller the catchment area and vice versa. The quaternary catchments are numbered alphanumerically in downstream order. A quaternary catchment number, for example D41A, may be interpreted as follows: the letter D denotes Primary Drainage Region D, the number 4 denotes secondary catchment 4 of Primary Drainage Region D, the number 1 shows that the secondary catchment has, in this case, been sub-divided into tertiary catchments, and the letter A shows that the quaternary catchment is the first in sequence downstream from the head of secondary catchment D41.
River basin	A geographical area determined by the watershed limits of a system of water, including surface and underground water, flowing into a common

	terminus.
Reserve	The quantity and quality of water required (a) to satisfy basic human needs by securing a basic water supply, as prescribed under the Water Services Act, 1997 (Act No.108 of 1997) for people, who are now or who will, in the reasonably near future, be supplied from the relevant water resource; and (b) to protect aquatic ecosystems in order to secure ecologically sustainable development and use of the relevant water resource as indicated in the National Water Act (Act No 36 of 1998).
Resilience	The ability of an ecosystem to maintain structure and patterns of behaviour in the face of disturbance or the ability to recover following disturbance.
Resource Quality	The quality of all the aspects of a water resource including: (a) the quantity, pattern, timing, water level and assurance of instream flow; (b) the water quality, including the physical, chemical and biological characteristics of the water; (c) the character and condition of the instream and riparian habitat; and (d) the characteristics, condition and distribution of the aquatic biota.
Resource Quality Objective	Quantitative and variable statements about water quantity, water quality, habitat integrity and biotic integrity that specify the requirements (goals) needed to ensure a particular level of resource protection.
River System	A network of rivers ranging from streams to major rivers and, in some cases, including rivers draining naturally separate basins that have been inter-connected by manmade transfer schemes.
Scheduled Land	Irrigable land to which a water quota has been allocated.
Sensitivity analysis	Assessment of the response of some factors as a result of changes in others.
Sewage	Liquid refuse or waste matter carried off by sewers.
Sewerage	The removal and disposal of sewage and surface water by sewer systems.
Subsistence Farming	Small-scale farming where almost all produce is consumed by the farmer's household or within the local community.
Suggested Ecological Management Class	A class of water resource indicating the suggested management objectives of an area which could possibly be attained within five years. Values range from Class A (largely natural) to Class D (largely modified).
Stakeholder	Organization or individual that is concerned with or has an interest in water resources and that would be affected by decisions about water resources

	management.
Strategy (Water Resources Strategy)	A set of medium to long-term action programs to achievement of development goals and to implement water-related policies.
Water Imports	Water imported to one drainage basin or secondary subcatchment from another.
Water Transfers	Water transferred from one drainage basin or secondary sub-catchment to another. Transfers in are synonymous with water imports.
Watercourse	A river or spring, natural channel in which water flows regularly or intermittently; a wetland, lake or dam into which or from which water flows.
Watershed	An area by a river or stream system; also referred to as a catchment area on which rain falls before running into rivers and/or seeping into the ground.
Wetlands	Areas of marsh, fen, peat land, or water that include natural, artificial, permanent, and temporary areas with static or flowing water that is fresh.
Yield	The maximum quantity of water obtainable on a sustainable basis from a dam in any hydrological year in a sequence of years and under specified conditions of catchment development and dam operation.