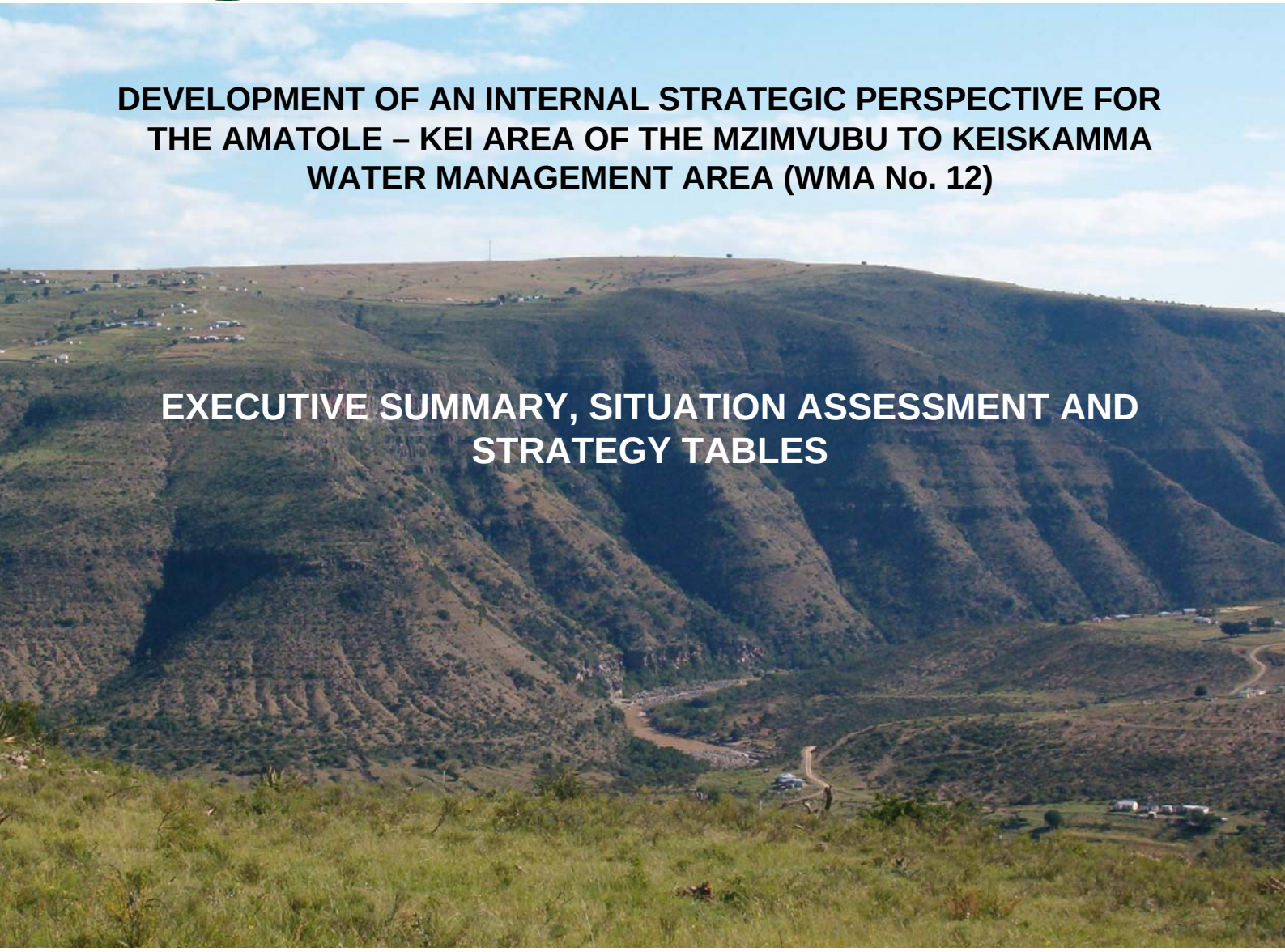
REPORT NO. P WMA 12/000/00/0404

Department of Water Affairs and Forestry
Directorate : National Water Resource Planning

DEVELOPMENT OF AN INTERNAL STRATEGIC PERSPECTIVE FOR THE AMATOLE – KEI AREA OF THE MZIMVUBU TO KEISKAMMA WATER MANAGEMENT AREA (WMA No. 12)



EXECUTIVE SUMMARY, SITUATION ASSESSMENT AND STRATEGY TABLES

August 2004

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Department of Water Affairs and Forestry
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DEVELOPMENT OF AN INTERNAL STRATEGIC PERSPECTIVE FOR THE AMATOLE – KEI AREA OF THE MZIMVUBU TO KEISKAMMA WATER MANAGEMENT AREA (WMA No. 12)

APPROVAL

Title	:	**Mzimvubu to Keiskamma Water Management Area: Amatole – Kei Internal Strategic Perspective**
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Report Status	:	Version 1, August 2004
Version Controller	:	Mr T Geldenhuys
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STUDY TEAM: **Approved for FST Consulting Engineers (Pty) Ltd**

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DWAF Report No. P WMA 12/000/00/0404.

INVITATION TO COMMENT

This report will be updated on a regular basis until it is eventually superseded by the Catchment Management Strategy. Water users and other stakeholders in the Mzimvubu to Keiskamma WMA and other areas are encouraged to study this report and to submit any comments they may have to the Version Controller (see box overleaf).

ELECTRONIC VERSION

This report is also available in electronic format as follows:

- DWAF website:
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VERSION CONTROL

Mzimvubu to Keiskamma WMA
Amatole – Kei Internal Strategic Perspective

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The most significant amendments included in the latest version will be indicated on this page.

AMATOLE – KEI INTERNAL STRATEGIC PERSPECTIVE

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ABBREVIATIONS AND ACRONYMS

ADM	Amatole District Municipality
AW	Amatola Water Board (more commonly known as Amatola Water)
AWSS	Amatole Water Supply System
BCM	Buffalo City Municipality
BoTT	Build, Operate, Train and Transfer (type of contract)
CCAW	Co-ordinating Committee for Agricultural Water
CEIMP	Consolidated Environmental Implementation and Management Plan
CHDM	Chris Hani District Municipality
CMA	Catchment Management Agency
CMIP	Consolidated Municipal Infrastructure Programme
CMS	Catchment Management Strategy
DLA	National Department of Land Affairs
DEAET	Eastern Cape Department of Economic Affairs, Environment and Tourism
DEAT	National Department of Environmental Affairs and Tourism
DM	District Municipality
DWAF	National Department of Water Affairs and Forestry
ECA	Environmental Conservation Act
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EPP	Emergency Preparedness Plans
GA	General Authorisation
GIS	Geographical Information System
GRIP	Groundwater Resource Information Programme
GWS	Government Water Scheme
IAC	Irrigation Action Committee
IDP	Integrated Development Plan
IDZ	Industrial Development Zone
ISP	Internal Strategic Perspective
IWRM	Integrated Water Resources Management
LA	Local Authority
LM	Local Municipality
MAE	Mean Annual Evaporation
MAP	Mean Annual Precipitation
MAR	Mean Annual Run-off
NEMA	National Environmental Management Act
NGDB	National Groundwater Data Base
NGO	Non-government Organisation
NWA	National Water Act
NWRS	National Water Resource Strategy

PDoA	Provincial Department of Agriculture
PGDP	Provincial Growth and Development Plan
PLC	Provincial Liaison Committee
RAMSAR	Conservation areas classified in terms in of this convention on wetlands
RO	Regional Office (DWAF)
RDM	Resource Directed Measures
RQO	Resource Quality Objectives
SFRALAAC	Licence assessment advisory committee for stream flow reduction activities
TINWA	Team for Implementation of the National Water Act
TDS	Total Dissolved Solids (mg/l)
VIP	Ventilated Improved Pit Latrine
WARMS	Water-use Authorisation and Registration Management System
WCDM	Water Conservation and Demand Management
WfW	Working for Water
WfWetlands	Working for Wetlands
WMA	Water Management Area
WQM	Water Quality Management
WRC	Water Research Commission
WRM	Water Resources Management
WRSA	Water Resources Situation Assessment
WRSM	Water Resources System Management
WSAM	Water Situation Assessment Model
WSDP	Water Services Development Plan
WTW	Water Treatment Works
WU	Water Utilisation
WUA	Water User Association
WWTW	Waste Water Treatment Works

Units

ha	hectare
km²	square kilometers
masl	metres above sea level
m³	cubic metre
m^3/a	cubic metres per annum
ppm	parts per million
%	percent

GLOSSARY OF TERMS

Aquiclude	An impermeable geological unit that cannot transmit water at all. (Very few natural geological materials are considered aquicludes).
Aquifer	A saturated permeable geological unit that can transmit significant (economically useful) quantities of water under ordinary hydraulic gradients. Specific geologic materials are not innately defined as aquifers and aquitards, but within the context of the stratigraphic sequence in the subsurface area of interest.
Aquitard	A saturated geological unit of relatively lower permeability within a stratigraphic sequence relative to the aquifer of interest. Its permeability is not sufficient to justify production wells being placed in it. (This terminology is used much more frequently in practice than aquiclude, in recognition of the rarity of natural aquicludes).
Assurance Of Supply	The reliability at 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 fail to be provided in 1 year in 50 years, or 2% of time.
Condensed Area	The equivalent area of alien plants with a maximum concentration/density that represents the more sparsely distributed alien plants that occurs over a large area.
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.
Commercial Farming	Large scale farming, the products of which are normally sold for profit.
Commercial Forests	Forests that are cultivated for the commercial production of wood or paper products.
Confined Aquifer	An aquifer that is physically located between two aquicludes, where the piezometric water level is above the upper boundary of the aquifer. The water level in a well tapping a confined aquifer usually rises above the level of the aquifer. If the water rises above ground level, the aquifer is called artesian.
Deficit	Describes the situation where the availability of water at a particular assurance of supply is less than the unrestricted water requirement.
Discharge Area	The area or zone where ground water emerges from the aquifer naturally or artificially. Natural outflow may be into a stream, lake, spring, wetland, etc. Artificial outflow may occur via pump wells.
Drainage Region	The drainage regions referred to in this document are either single large river catchments, 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 unit made up of all the living and non-living components of a particular area that interact and exchange materials with each other.
Environmentally Sensitive Area	A fragile ecosystem, which will be maintained only by conscious attempts to protect it.
Groundwater	Water in the subsurface, which is beneath the water table, and thus present within the saturated zone. In contrast, to water present in the unsaturated or vadose zone which is referred to as soil moisture.
Irrigation Quota	The quantity of water, usually expressed as m^3/ha/y, or mm/y, 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.
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, the areas irrigated generally have to be reduced in dry years.
Porosity	The degree to which the total volume of soil or rock is permeated with spaces or cavities through which water or air can move.
Potable Water	Water which is free from impurities that may cause disease or harmful physiological effects, such that the water is safe for human consumption.
Potentiometric or Piezometric Surface	An imaginary surface formed by measuring the level to which water will rise in wells of a particular aquifer. For an unconfined aquifer the potentiometric surface is the water table; for a confined aquifer it is the static level of water in the wells. (Also known as the piezometric surface).
Primary Aquifer	Aquifers in which the water moves through the spaces that were formed at the same time as the geological formation was formed, for instance intergranular porosity in sand (for example alluvial deposits).
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 are numbered alpha-numerically in downstream order. A quaternary catchment number, for example R30D, may be interpreted as follows : the letter R denotes Primary Drainage Region R, the number 3 denotes secondary catchment 3 of Primary Drainage Region R, the number 0 shows that the secondary catchment has not, in this case, been sub-divided into tertiary catchments, and the letter D shows that the quaternary catchment is the fourth in sequence downstream from the head of secondary catchment R30.
Reconciliation	Process to effect (or establish) a favourable yield balance
Reliability Of Supply	Synonymous with assurance of supply.

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 (i) relying upon; (ii) taking water from; or (iii) being 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).
Resource Directed Measures	Measures that focus on the quality and overall health of water resources.
Reservoir	The lake formed behind a dam wall. In this report the colloquial term dam is generally used for reservoir.
Resource Quality	The quality of all the aspects of a water resource including: (a) the quantity, pattern, timing, water level and assurance of in-stream flow; (b) the water quality, including the physical, chemical and biological characteristics of the water; (c) the character and condition of the in-stream and riparian habitat; and (d) the characteristics, condition and distribution of the aquatic biota.
Resource Quality Objective	Quantitative and verifiable 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 man-made transfer schemes.
Salinity	The concentration of dissolved salts in water. The most desirable drinking water contains 500 ppm or less of dissolved minerals.
Saturated Zone	The subsurface zone below the water table where pores within the geologic matrix are filled with water and fluid pressure is greater than atmospheric. Aquifers are located in this zone.
Scheduled Land	Irrigable land to which a water quota has been allocated.
Secondary Aquifer (Also known as a Fractured-Rock Aquifer)	Aquifers in which the water moves through spaces that were formed after the geological formation was formed, such as fractures in hard rock.
Semi-Confined Aquifer (Also known as a Leaky Aquifer)	An aquifer that is physically located between two aquitards, and where the piezometric water level is above the upper boundary of the aquifer.
Source Directed Controls	Measures primarily designed to control water use activities at the source of impact, through tools such as standards, and conditions in water use authorisations.
Sub-Catchment	A sub-division of a catchment.
Subsistence Farming	Small-scale farming where almost all produce is consumed by the farmer's household or within the local community.
Surplus	Describes the situation where the availability of water at a particular assurance of supply is more than the unrestricted water requirement.

Unconfined Aquifer (also known as a water table aquifer)	An aquifer, which is not restricted by any confining layer above it. Its upper boundary is the water table, which is free to rise and fall. The water level in a well tapping an unconfined aquifer is at atmospheric pressure and does not rise above the level of the water table within the aquifer. An unconfined aquifer is often near to the earth's surface and not protected by low permeable layers, causing it to be easily recharged as well as contaminated.
Unsaturated Zone	An area, usually between the land surface and the water table, where the openings or pores in the soil contain both air and water.
Water Imports	Water imported to one drainage basin or secondary sub-catchment from another.
Water Table	The top of an unconfined aquifer where water pressure is equal to atmospheric pressure. The water table depth fluctuates with climate conditions on the land surface above and is usually gently curved and follows a subdued version of the land surface topography.
Water Transfers	Water transferred from one drainage basin or secondary sub-catchment to another. Transfers-in are synonymous with water imports.
Yield	The maximum quantity of water obtainable on a sustainable basis from a dam or river in any hydrological year, in a sequence of years, and under specified conditions of catchment development and dam operation.
Yield Balance	The comparison of available water to water requirement. The balance could show a deficit or a surplus or be in equilibrium.