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Feasibility Study for Augmentation of the Lusikisiki Regional Water Supply Scheme (WP 10317)

LEGAL, INSTITUTIONAL AND FINANCIAL ARRANGEMENTS

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Author:	***P Ramsden***
Team	***P Ramsden***
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CONSULTANT

AECOM (BKS) in association with AGES, KARIWA, Scherman Colloty & Associates and Urban-Econ.*

Approved for ***Consultants****:*

P Ramsden	*H Pieterse*
Task Leader	*Study Leader*

DEPARTMENT OF WATER AFFAIRS (DWA)

Directorate: Options Analysis

*Approved for DWA****:***

M Mugumo	*LS Mabuda*
Chief Engineer: Options Analysis (South)	*Chief Director: Integrated Water Resource Planning*

* *BKS (Pty) Ltd was acquired by AECOM Technology Corporation on 1 November 2012*

LIST OF STUDY REPORTS

This report forms part of the series of reports, prepared for the Feasibility Study for Augmentation of the Lusikisiki Regional Water Supply Scheme. All reports for the Study are listed below.

Report Name	DWA Report Number
Water Resources Assessment	P WMA 12/T60/00/3711
Assessment of augmentation from Groundwater	P WMA 12/T60/00/3811
Intermediate Reserve Determination	P WMA 12/T60/00/3911
Legal, Institutional and Financial Arrangements	***P WMA 12/T60/00/4011***
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Materials and Geotechnical Investigations	P WMA 12/T60/00/4411
Zalu Dam Feasibility Design	P WMA 12/T60/00/4511
Regional Economics	P WMA 12/T60/00/4611
Environmental Screening	P WMA 12/T60/00/4711
Record of Implementation Decisions	P WMA 12/T60/00/4811
Main Study Report	P WMA 12/T60/00/4911

This report is to be referred to in bibliographies as:

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Prepared by:

AECOM

AECOM SA

In association with:

AGES (Pty) Ltd.

KARIWA

Scherman Colloty and Associates cc
Environmental and Aquatic Management Consulting

URBAN-ECON
Development Economists

Executive summary

This report makes recommendations regarding the institutional arrangements and the funding of the Zalu Dam, the associated water treatment works and regional water supply works.

There are various institutions that can play a role, namely National Treasury, the Department of Water Affairs (DWA), OR Tambo DM and a water board, being either Amatola Water or Umgeni Water.

Approximately 72% of the population in the supply area is poor. The works will accordingly need to be subsidised through grant funding, either RBIG or a dedicated grant on the DWA budget. Because of the low affordability of the users the portion of the project that can be funded off-budget, i.e through the private sector, is very limited.

DWA will need to decide who should own the Zalu Dam. The dam is not National Water Infrastructure as defined in the NWRS but would rather fall into the category of Regional Water Infrastructure. There are however strategic reasons why DWA may wish to own Regional Dams, including that such ownership would enable the Minister to regulate and control water allocation and dam safety more directly.

DWA would also need to decide who should implement the dam. DWA could implement the dam itself or direct either TCTA or a water board (Amatola Water or Umgeni Water) to implement the dam as an implementing agent on its behalf.

The ownership of the water treatment works and bulk distribution pipelines could reside with OR Tambo DM or with a water board. Given the intention expressed in the NWRS for water boards to be consolidated into Regional Water Utilities and given the future role that is intended for these utilities there is a strong motivation to direct a water board to own, implement and operate the water treatment works and bulk distribution pipelines.

The responsibility for applying for the required grant funding should be aligned to ownership. If, for example, it was decided that DWA should own the dam and that a water board or OR Tambo DM should own the water treatment works and pipelines then there would be two separate applications for grant funding, and these applications would need to be aligned.

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List of abbreviations

DWA	The Department of Water Affairs
BKS	BKS (Pty) Ltd
RSA	Republic of South Africa
D:NWRP	Directorate: National Water Resource Planning
EPBS	Eastern Pondoland Basin Study
LRWSS	Lusikisiki Regional Water Supply Scheme
Zalu Dam	Proposed dam at the Zalu site
Capex	Capital expenditure

List of units

a	annum
ha	hectare
hrs	hours
km	kilometre
km^2	square kilometre
ℓ	litre
kℓ	kilolitre
ℓ/cap/day	litre per capita per day
m	metre
m/s	metre per second
m^3/s	cubic metre per second
masl	metres above sea level
million m^3	million cubic metres
million m^3/a	million cubic metres per annum
Mℓ/day	megaliter per day
mm	millimetre
MW	megawatt
Ø	diameter in millimetres
s	second

1 INTRODUCTION

The Department of Water Affairs (DWA) appointed **BKS (Pty) Ltd** in association with four sub-consultants (**Africa Geo-Environmental Services, KARIWA Project Engineers & Associates, Scherman Colloty & Associates and Urban-Econ**) with effect from 1 September 2010 to undertake the **Feasibility Study for Augmentation of the Lusikisiki Regional Water Supply Scheme**.

On 1 November 2012, BKS (Pty) Ltd was acquired by **AECOM Technology Corporation**. The new entity is a fully-fledged going concern with the same company registration number as that of BKS. As a result of the change in name and ownership of the company during the study period, all the final study reports will be published under the AECOM name.

1.1 BACKGROUND TO THE PROJECT

In the 1970s Consultants O'Connell Manthé and Partners and Hill Kaplan Scott recommended that a regional water supply scheme based on a dam on the Xura River and a main bulk supply reservoir close to Lusikisiki (located within the then defined "administration area" of the Zalu Dam) would provide potable water supply for the entire region between Lusikisiki and the coast, extending from the Mzimvubu River in the south west to the Msikaba River in the north east. Some areas up to 15 km inland of Lusikisiki would also be supplied. A **White Paper** describing the scheme was tabled by the Transkei Government in 1979. It was envisaged that the scheme would be constructed in phases. Details of the proposed phasing of the scheme are provided in in *Lusikisiki Regional Water Supply: Preliminary Report* (Hill Kaplan Scott, 1986).

After the reincorporation of the Transkei Homeland into the Republic of South Africa (RSA) in 1994, the DWA took over responsibility for further development of the scheme. The Directorate: Water Resources Planning commissioned the *Eastern Pondoland Basin Study* (EPBS) in 1999 to further investigate the water supply situation in the area, with a specific focus on future development in the area originally earmarked for the Lusikisiki Regional Water Supply Scheme (LRWSS). This detailed investigation was undertaken for surface and groundwater sources, which re-affirmed that the Zalu Dam was the preferred

source of surface water and recommended further investigation of groundwater sources to augment water supply to the entire area or to sub-areas.

In 2007, SRK Consulting undertook the *Lusikisiki Groundwater Feasibility Study* to investigate groundwater potential and compare the new data with data produced by earlier studies. This study reported that there is a relatively strong possibility of finding high yielding boreholes, and that a combination of surface water (Zalu Dam) and groundwater would be the most feasible solution for the LRWSS.

1.2 STUDY AREA

The study area comprises the entire region between Lusikisiki (up to about 15 km inland) and the coast, extending from the Mzimvubu River in the south-west to the Msikaba River in the north-east. This area includes the Zalu Dam site (and its catchment) in the Xura River and the selected conveyance routes between the dam and the extended supply area. It also includes the boreholes to be selected for augmentation and the routes of the pipelines to augment the water supply to the users.

During the Inception Phase the study area was extended in the vicinity of the Zalu Dam and to the north of Lusikisiki, as agreed with the DWA and as indicated on **Figure 1.1**. In the south-western part of the study area the main focus will be on water supply from groundwater, due to the distance from the surface water source, Zalu Dam, as well as unfavourable topography.

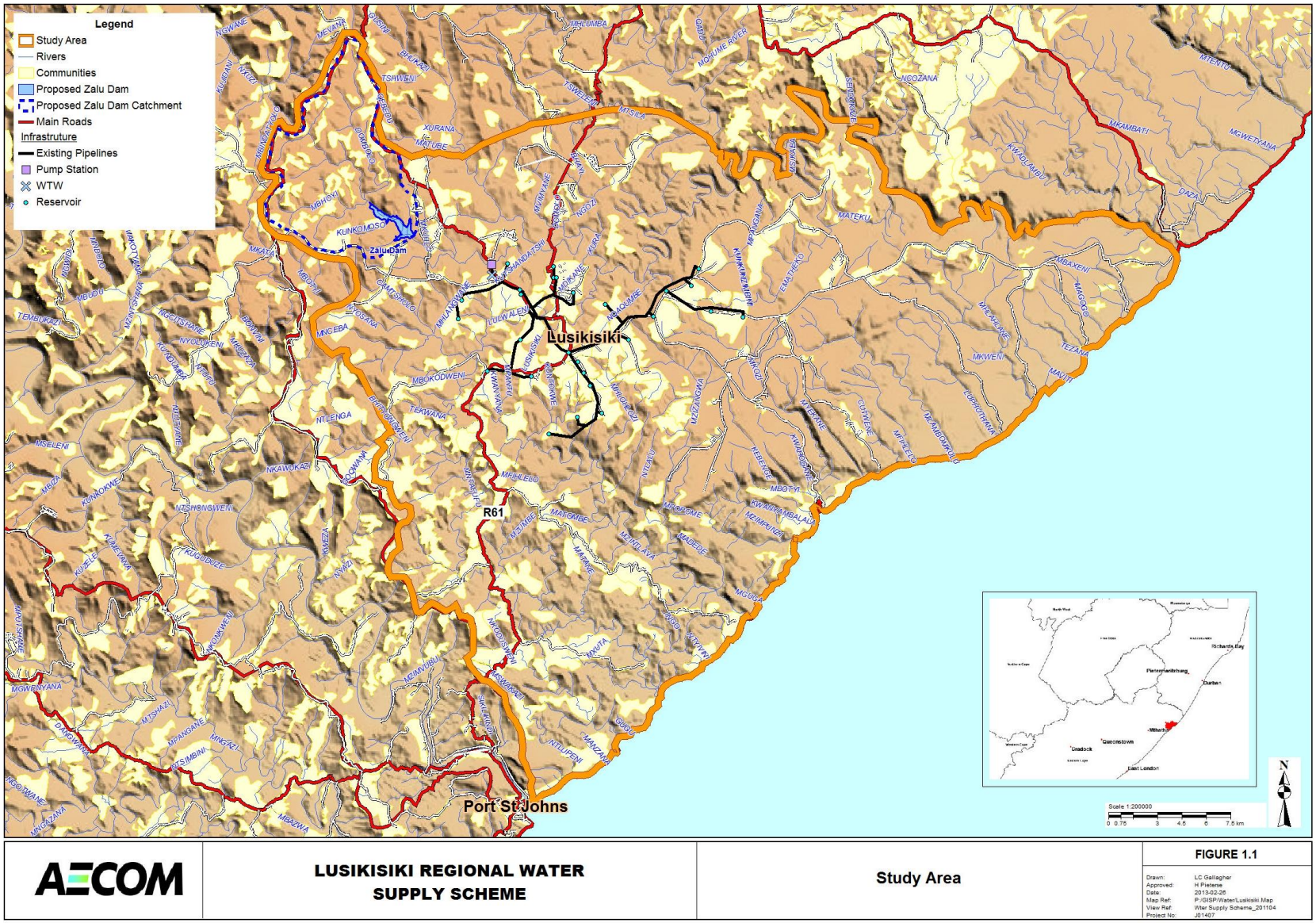

Figure 1.1: Study area

1.3 OBJECTIVE, SCOPE AND ORGANISATION OF THE STUDY

The objective of this study was to complete a comprehensive engineering investigation at feasibility level for the proposed LRWSS, including the possible Zalu Dam on the Xura River, and to define the most attractive composition and size of the water supply components, taking augmentation from groundwater resources into account.

This feasibility study provided for the assessment of all aspects that impact on the viability of utilising a combination of surface water (via the Zalu Dam on the Xura River) and groundwater (via boreholes) for the expansion of the existing water supply scheme to provide all water users in the study area with an appropriate level of service and assurance of water supply. The study was therefore required to:

- Identify all of the technical issues likely to affect implementation, and to define and evaluate all of the actions required to address these issues;
- Provide an estimate of cost with sufficient accuracy and reliability to ensure that management decisions can be made with confidence;
- Investigate irrigation viability; and
- Provide sufficient information to enable design and implementation to proceed without further investigation.

The required activities for this project have been grouped into 14 modules, as displayed in **Table 1.1**.

Table 1.1: Study structure

Modules	Deliverable
1. PROJECT MANAGEMENT 1.1 Study initiation and inception 1.2 Project management and administration	**Inception Report**
2. WATER RESOURCES	**Water Resources Report**
2.1 Hydrology	♦ Hydrology chapter
2.2 Yield analysis	♦ Yield Analysis chapter
2.3 Reservoir sedimentation	♦ Sedimentation chapter
3. GROUNDWATER AUGMENTATION	**Assessment of Augmentation from Groundwater Report**
4. RESERVE - ECOLOGICAL WATER REQUIREMENTS	**Reserve Determination Report** ♦ Reserve Template
5. WATER REQUIREMENTS	
5.1 Domestic water requirements	**Domestic Water Requirements Report**
5.2 Agriculture / Irrigation potential	**Irrigation Development Report**
6. WATER SERVICE INFRASTRUCTURE	**Water Distribution Infrastructure Report**
6.1 Distribution infrastructure	♦ Chapter in Water Distribution Infrastructure Report
6.2 Water quality	♦ Chapter in Water Distribution Infrastructure Report
7. PROPOSED ZALU DAM	
7.1 Site investigations	**Materials & Geotechnical Investigations Report**
7.2 Dam technical details	**Zalu Dam Feasibility Design Report** including design criteria, dam type selection, dam sizing
8. COST ESTIMATE AND COMPARISON	♦ Included in relevant reports
9. REGIONAL ECONOMICS	**Regional Economics Report**
10. ENVIRONMENTAL SCREENING	**Environmental Screening Report** ♦ Scope of work for EIA
11. PUBLIC PARTICIPATION	♦ Included in Environmental Screening Report
12. LEGAL, INSTITUTIONAL AND FINANCIAL ARRANGEMENTS	**Legal, Institutional and Financial Arrangements Report**
13. RECORD OF IMPLEMENTATION OF DECISIONS	**Record of Implementation Decisions Report**
14. MAIN REPORT AND REVIEWS	**Main Study Report**

1.4 SCOPE OF THIS REPORT

A component of the study is to recommend funding and institutional arrangements for implementing and operating the works.

Various development options have been considered but for this funding report it is assumed that a complete new bulk supply system with the capacity to utilise the full primary yield of Zalu Dam will be constructed and the existing WTW at Xura River will be decommissioned. The primary components of the works are:

- The Zalu Dam in the Xura River with a full supply level of 612 masl, approximately 8.1 million m^3 storage and a yield of 6,95 million m^3/a at a 98% assurance of supply;
- A new 2.1 Mℓ/d WTW at the Zalu Dam;
- The construction of a new 14.79 Mℓ/d WTW at Xura and the decommissioning of the existing 2.76 Mℓ/d WTW;
- Reservoirs; and
- Distribution pipelines.

Borehole developments have been identified as suitable for serving the sparsely populated areas furthest from the dam.

The initial investment for a Zalu Dam with a FSL at 612 masl is approximately R 1 100 million in 2013 Rands, is made up as shown in **Table 1.2.**

Table 1.2: Initial investment

Project components	R million - 2013 Rands (excluding interest and VAT)	
	Zalu Dam at FSL 612 masl	Zalu Dam at FSL 622.6 masl
Zalu Dam (including Preliminary and General and Contingencies)	R 486 919	R 714 580
New Water Treatment Works	R 81 287	R 81 287
Bulk Water Pipelines	R 167 055	R 167 055
Pumping stations	R 33 071	R 33 071
Bulk Supply and Village Reservoirs	R 221 143	R 221 143
Borehole Development	R 9 147	R 9 147
Preliminary and General for Bulk water components	R 102 341	R 102 341
Total development cost in 2013 Rands (excluding interest and VAT)	**R 1 100 963**	**R 1 328 624**

There is potential to utilise water for irrigation. The size of the dam and the implementation of the irrigation should be confirmed before the final design of the bulk distribution infrastructure commences.

Annual energy requirements for surface and groundwater pumping is in the order of R 3.4 million in 2040 and R 4.7 million in 2060.

Inflation and interest charges should be added to these amounts.

This *Legal, Financial and Institutional Arrangements* report is part of the deliverable for **Module 12** of the *Feasibility Study for Augmentation of the Lusikisiki Regional Water Supply Scheme*.

2 BENEFICIARIES OF THE WORKS

The OR Tambo District Municipality (DM) is the Water Services Authority.

The works will only supply a portion of the OR Tambo DM area and will not supply any areas outside of the OR Tambo DM jurisdiction.

Population projections were carried out for two regions – the LRWSS Supply Area, which denotes the area influenced by the proposed Zalu dam, and the Study Area, a larger region which encompasses the Supply Area and areas of significant groundwater abstraction potential. These projections are displayed in **Table 2.1** below.

Table 2.1: Population growth scenarios, 2010 - 2040

Area	LRWSS Supply Area				Study Area			
Scenario	Low growth scenario	Medium growth scenario	High growth scenario	Most probable scenario	Low growth scenario	Medium growth scenario	High growth scenario	Most probable scenario
Average Annual Growth Rate	0.3%	1.1%	2.1%	1.6%	0.3%	0.9%	1.5%	1.2%
2010	78 700	78 700	78 700	78 700	162 800	162 800	162 800	162 800
2015	81 600	82 900	85 200	84 100	168 600	170 600	173 600	172 100
2020	83 600	87 800	94 000	90 900	172 000	178 900	188 400	183 650
2025	84 400	92 600	104 600	98 600	173 700	187 500	206 500	197 000
2040	85 700	107 800	147 200	127 500	179 000	211 300	258 200	234 750

Source: DWA and Urban-Econ Calculations, 2011

The 2010, 2020, 2030 and 2040 domestic water demands according to the most probable domestic water requirements for the Supply and Study Area are presented in **Table 2.2** below.

Table 2.2: Most probable annual domestic water demand scenario

Area	Most Probable Domestic Water Requirements (million m^3/a)			
	2010	2020	2030	2040
Supply Area	3.3	3.8	4.5	5.4
Study Area	6.8	7.6	8.7	9.9

Source: DWA and Urban-Econ Calculations, 2011

3 POVERTY

Socio-economic data was provided by DWA (*Department of Water Affairs, 2008*) and were analysed by Urban-Econ as part of the Feasibility Study (refer to *DWA Report No. P WMA 12/T60/00/4111*).

Females outnumbered males in the Supply Area and the largest portion of the population is younger than 30 years old.

Half of the population in the Study Area has not attended school; however, children between the age of 0 to 5 years have been included in the category, which inflates the number. Of the people that have some kind of formal education, 29.8% have some or complete primary education and 43.5% have some or complete secondary education.

Approximately 66.7% of the population in the Study Area is unemployed and approximately only 19% of the population is employed in the formal sector.

More than half of the population in the Study Area earns an income below the poverty line, with 27.1% earning annual incomes of less than R 6 652 per annum. Almost half of the Study Area's main source of income is from social grants, followed by salaries and wages. Non-durable goods represent the largest portion of the expenditure, followed by expenditure to services.

Businesses in the food and non-alcoholic beverages retail line (including tuck shops and food stands) are most prevalent, followed by clothing and footwear outlets. The majority of businesses in Lusikisiki have been operating for less than 10 years.

According to the Market Survey, the river-stream is the main source of water followed by a "regional/local water scheme" (17%).

4 POSSIBLE FUTURE INSTITUTIONAL ARRANGEMENTS WITHIN THE WATER SECTOR

4.1 ENVISAGED INSTITUTIONAL ARRANGEMENTS IN THE WATER SECTOR

The currently envisaged institutional arrangement for managing South Africa's water infrastructure is understood to be as follows:

National infrastructure will be ring-fenced and transferred to an appropriate institutional model for National Water Resources Infrastructure, which will optimise sector capacity for managing national water resources infrastructure and be operational by 2015. Given the magnitude of this task, DWA will adopt a phased approach to establishing the appropriate institutional model to ensure that associated risks are managed and mitigated. DWA will also provide technical and financial support to ensure that the institutional model becomes sustainable as soon as possible.

TCTA will continue its present functions of financing and project-managing the construction of water resources infrastructure that is funded off-budget. Once the institutional model is functioning in a stable manner, TCTA may be fully incorporated into the institutional model.

The 12 existing water boards will be consolidated into nine viable regional water utilities (RWU) to strengthen the development, financing, management, operation and maintenance of regional bulk water and wastewater infrastructure. The RWU will be fully established and operational by 2015.

According to the National Water Resource Strategy of 2013 (being the second edition of the strategy it is known as the NWRS-2) the mandate of RWU will be expanded to include the development and management of regional water resources, regional bulk water services and regional wastewater infrastructure. They will be responsible for the financing, development, management, operation and maintenance of regional bulk water infrastructure in an efficient and effective manner to meet the social and economic development needs of current and future users to achieve the objectives of integrated water resources management. The RWU will also play a strong secondary role of supporting municipalities by providing water services on their behalf to users or by

providing services directly to municipalities on a contractual basis, provided this does not detract from their ability to fulfil their primary functions.

According to the NWRS-2, the major functions of Regional Water Utilities will be to:

- Manage bulk water services infrastructure and supply bulk water to Water Services Authorities (WSAs) and their Water Services Providers, and to bulk water consumers;
- Manage bulk sanitation infrastructure for wastewater treatment;
- Operate existing regional water resources infrastructure;
- Develop new regional water resources infrastructure;
- Provide support to Water Services Authorities, where appropriate; and
- Provide support to CMAs to undertake water resources management functions.

In contracting with WSAs to provide affordable and sustainable water services in accordance with Section 78 of the Municipal Systems Act, Regional Water Utilities will be able to complement local government capacity through the benefits of economies of scale by integrating risk management and by leveraging finance for commercial water supply projects.

Regional Water Utilities may use water for any of the uses defined in Section 21 of the National Water Act (NWA), subject to them obtaining Water Use Licences (WUL). Applications for such licences must be made to the DWA or a CMA and may be issued subject to appropriate conditions.

Municipal water services infrastructure will be managed by District Municipalities in accordance with their Constitutional mandate, unless the power and function is delegated to the Local Municipality (LM).

4.2 Definition of the Different Types of Infrastructure

National infrastructure is defined in the NWRS-2 as "*schemes that are of wider importance (than local schemes) because they transfer water across national boundaries or between water management areas, serve multiple user sectors or large geographic areas, comprise several interconnected catchments, or serve a strategic purpose, such as the generation of electricity for the national grid"*.

Municipal water services infrastructure comprises potable water infrastructure that terminates at the consumer.

Difficulties have been experienced in defining Bulk Water Services infrastructure or Regional Water Resource Infrastructure. Specifically, much emphasis has to date been placed on the term bulk, and then in trying to differentiate between regional bulk and municipal bulk.

If the road system paradigm of National, Regional/Provincial and Municipal Roads was followed, it would merely be necessary for the hierarchy of water infrastructure, namely National, Regional and Municipal water infrastructure, to be clearly identified and demarcated and for each parcel to be allocated to the preferred National Agency, Regional Utility or Water Services Authority.

The Constitution provides for National Government Ministers to provide Norms and Standards. The Minister may accordingly provide Norms and Standards for defining the hierarchy of infrastructure and then proceed with identifying and demarcating the National and Regional Water Infrastructure, and the interface between that infrastructure and municipal infrastructure.

The Regional Infrastructure would generally comprise regional water treatment works, regional waste water treatment works and regional bulk pipelines (potable or raw water) and sewers.

DWA would decide on a case-by-case basis whether regional water resource infrastructure (dams, weirs and canals) would be transferred to Regional Utilities or owned nationally. Current indications are that dams would mostly be owned nationally in order to enable the Minister to regulate the resource and the allocation of water from the resource.

Whether National Infrastructure or Regional Infrastructure would serve strategic and other industries, such as Eskom power stations or mines, would be determined by the Minister on a case-by-case basis using the Norms and Standards but also based on practical considerations such as the need to have single entities manage contiguous infrastructure and on the capacity of the relevant municipality.

The National and Regional Water Infrastructure would, however, generally not supply communities directly, i.e. domestic households. That is the Constitutional function of the Municipality. Exceptions such as farmer off-takes etc. from regional pipelines could be accommodated by a Regional Water Utility, but certainly not by municipal reticulation which has a primary purpose of reticulating to domestic households.

4.3 LEGAL AND CONTRACTUAL IMPLICATIONS FOR WATER RESOURCES INFRASTRUCTURE

The mandate to operate and maintain the National Water Resources Infrastructure would be derived from the Minister.

The Minister would provide the mandate to develop the National Water Resources Infrastructure to DWA, TCTA or to the new institutional arrangement which includes TCTA.

Likewise, the Minister would demarcate the boundary of each Regional Water Utility and identify and assign the operation and perhaps the ownership of Regional Water Resources Infrastructure to each.

The Municipality would not be the owner of the Regional Water Resources Infrastructure. The Minister (either through DWA, TCTA or a new national infrastructure institution) or a mandated Regional Water Utility would be the owner of the Regional Water Resource Infrastructure and as such would determine who operates it and for how long (generally indefinitely until the Minister reallocates or reorganises the function).

The Municipality would however decide whether it, another municipality or a Regional Water Utility would operate the municipal water services infrastructure as WSP. That discretion would remain with the Municipality. If the Municipality allocates that water services function to a Regional Water Utility then it would be a secondary function of the Regional Water Utility and it would perform that function under contract to the municipality.

4.4 WATER PRICING UNDER THE NEW INSTITUTIONAL ARRANGEMENTS

The Minister would together with Parliament regulate the National Water Pricing and set the National Water Pricing Strategy.

Similarly, the Minister would also regulate the price structure of the Regional Water Utilities, and set the Norms and Standards.

The Municipality, as customer and as the body constitutionally responsible for providing water services and especially basic water services, would be consulted on Regional and National Water Resource and Bulk Water Services pricing under the regulation of the Minister.

However, the Municipality would determine the municipal tariff, although within the parameters of the Norms and Standards set by the Minister and under the regulation of the Minister.

4.5 FINANCIAL IMPLICATIONS OF THE NEW INSTITUTIONAL ARRANGEMENTS

While a national water resource tariff was considered, it appears that system based tariffs would be the norm. This means that there would be a degree of cross subsidisation within a system.

Not all regional schemes will be supplying bulk water to municipalities with the same density of population or economic generating capacity. RBIG-type grants would be made available for the development of capital works that serve municipalities with poorer communities. Alternatively, National Treasury could increase the Equitable Share of the benefiting poorer municipalities to assist them in affording the increased capital charge associated with new schemes.

For example, TCTA or a Regional Water Utility tasked with constructing Zalu Dam could access RBIG or other grant funding, or alternatively National Treasury could increase the Equitable Share grant to OR Tambo District Municipality.

4.6 A NOTE ON THE CURRENT OPERATIONS OF WATERWORKS WITHIN OR TAMBO DM

The Blue Drop 2011 regulatory impression was that OR Tambo DM is not performing well as yet, but was impressed with a noteworthy improvement from an outcome of 22.2% in 2010 to an outcome of 43.7% in 2011.

5 EVALUATION OF FUNDING OPTIONS

An important component of the feasibility study is to recommend institutional arrangements for funding and operating the Zalu Dam.

What follows is a broad sketch of possible funding and institutional options.

It is evident that the institutional arrangements and the funding arrangements are interdependent. This statement will become clearer when the options discussed below are considered.

A few of the options may prove to be financially unrealistic or not practically implementable. The identified options can serve either as stand-alone options or as partial solutions in combination with others.

The following funding options have been identified:

- Option 1: OR Tambo DM allocates a portion of its MIG grant funding to the project and OR Tambo DM raises the remainder of the funding from commercial sources;
- Options 2: National Government provides a special/dedicated grant using the Regional Bulk Infrastructure Grant (RBIG) mechanism;
- Option 3: A water board (or future Regional Water Utility) such as Amatola Water or Umgeni Water is directed to implement the works as implementing agent;
- Option 4: A water board such as Amatola Water or Umgeni Water is used as bulk water service provider in a swap arrangement and funds the works with a mix of grant and private funding;
- Option 5: DW, TCTA or the new national water resource infrastructure institutional arrangement constructs the Zalu Dam as a Government Waterworks and either DWA itself operates the dam or DWA contracts with a water board to operate the dam on its behalf.

These funding options, which can be used in certain combinations, are now evaluated:

5.1 OPTION 1: OR TAMBO

The first funding option is that OR Tambo allocates a portion of its MIG grant funding to the project or raises loan funding from commercial sources (bank loans).

OR Tambo DM's Operations budget (Financial Performance before capital transfers) for 2011/12 is depicted in **Table 5.1**.

Table 5.1: OR Tambo DM's Operations budget for 2011/2012

Financial Performance	2011/12 Full Year Forecast R thousands
Property rates	–
Service charges	125 444
Investment revenue	11 274
Transfers recognised – operational	397 535
Other own revenue	119 806
Total Revenue (excluding capital transfers and contributions)	**654 060**
Employee costs	208 173
Remuneration of councillors	10 132
Depreciation & asset impairment	150 000
Finance charges	–
Materials and bulk purchases	73 795
Transfers and grants	72 390
Other expenditure	289 570
Total Expenditure	**804 060**
Surplus/(Deficit)	**(150 000)**

It can be seen from the above Operations budget that 60% of OR Tambo DM's operational revenues are made up of Transfers (i.e. grant funding).

OR Tambo DM's Capex budget for 2011/12 was as shown in **Table 5.2**.

Table 5.2: OR Tambo DM's Capex budget for 2011/2012

Capital expenditure & funds sources	2011/12 Full Year Forecast R thousands
Capital expenditure	**721 381**
Transfers recognised – capital	721 381
Public contributions & donations	–
Borrowing	–
Internally generated funds	–
Total sources of capital funds	**721 381**

It can be seen from the above Capex budget that OR Tambo's capital expenditure is funded solely out of transfers, i.e. Capex is 100% dependent on grant funding.

Given the current dependence on grant funding it is unlikely that OR Tambo DM is in a position to raise substantial loan funding.

According to Stats SA household surveys there are 279 444 households in the OR Tambo DM area. Approximately 112 812 (40%) have access to piped water.

The breakdown of their access to water is shown in **Table 5.3**.

Table 5.3: Stats SA estimates of access to water in the OR Tambo DM area

	Households
Piped water inside dwelling	19 689
Piped water inside yard	21 758
Piped water from access point outside of yard	71 365
Sub-total	**112 812**
Borehole	2 117
Spring	15 706
Dam/pool	6 061
River/stream	124 311
Water vendor	2 200
Rain water tank	15 676
Other	861
Sub-total	**166 932**
Total	**279 744**

Source: Stats SA

From the table above it is evident that there is still a huge backlog in water services provision in the OR Tambo DM.

It is perhaps preferable that OR Tambo allocates its MIG funding to address its current backlog rather than re-allocate MIG funding to regional bulk infrastructure.

In conclusion it does not appear likely that OR Tambo can make a substantial contribution towards the capital cost of the Lusikisiki bulk infrastructure project without compromising its already tenuous financial position or its ability to deal with its current water services backlogs.

Discussions were held with OR Tambo officials and it was confirmed that OR Tambo is not currently in a position to raise substantial loan funding.

5.2 OPTION 2: NATIONAL GOVERNMENT PROVIDES GRANT FUNDING THROUGH RBIG

The second option suggests that National Government provides grant funding through the RBIG fund. In light of the recognition given to water projects as mechanisms to create employment in the latest Presidential State of the Nation Address, the relative poverty of the population residing in the OR Tambo DM area, and the social benefits of this project, there is a possibility that Government would favourably consider making a grant available to this project. In this context it should be noted that some 72% of the population of the DM are unemployed and presumably cannot pay for water.

National Treasury has allocated special funding for regional bulk water services infrastructure amounting to R 5 738 million over six years since its inception during 2007/2008. This grant is known as the Regional Bulk Infrastructure Grant (RBIG). The following amounts have been granted annually through the fund:

- 2007/2008 R 300 million
- 2008/2009 R 450 million
- 2009/2010 R 611 million
- 2010/2011 R 839 million
- 2011/2012 R 1 675 million
- 2012/2013 R 1 862 million

The proposed Zalu Dam is a regional dam, as opposed to a national dam, as the full supply area falls within the OR Tambo DM.

The DWA coordinator of the RBIG (based at the Head Office) and National Treasury have confirmed that in principle RBIG can be used for the funding of the social component of regional dams and associated regional water supply schemes.

The amount of the grant, whether from RBIG or through another mechanism (perhaps donor funding) should at least cover the percentage of the water that will be allocated to the rural poor who cannot afford to pay for water (approximately 72% of the cost of works).

Although Zalu Dam is a local dam, dams of this size present a significant dam safety risk. It is preferable that the DWA, TCTA or another well qualified implementing agent such as a Regional Water Utility (Amatola Water or Umgeni Water) should manage the construction of the dam. The proper management of the design and construction of the regional water supply scheme can be ensured under the RBIG policy, especially where a large percentage of the scheme is to be funded by RBIG and not by the municipality.

5.2.1 Application for RBIG funding

The submission for project funding applications through the Regional Bulk Infrastructure Grant must address the following:

- Compliance with water resource policy and legislation;
- Proven implementation readiness: All preparatory work must be completed and approved, including project specific implementation feasibility studies, environmental impact assessments, environmental and water resource licensing, social acceptance, financing and institutional arrangements;
- Need for funding: The entity applying for funding of a project needs to illustrate that it has limited financial ability to source the required funds on the market and motivate why the social component of the project should be funded through RBIG. The DWA may request specific economic viability assessments (this is currently being done in Module 9 of the current study);
- A financing plan must be in place showing the combination of its various funds and financing arrangements, cash flow projections and overall financial viability of the project;

- Co-funding must be secured for the economic (higher level of services) components. The calculation method for the social and economic components must be clearly demonstrated and quantified according to specification (e.g. the proportional cost based on volumetric water use);
- Ownership of infrastructure: Prior to construction of the infrastructure an agreement must be reached on who will own the infrastructure and how and when ownership will be assumed. This may require a transfer agreement between the relevant institutions;
- Any infrastructure funded through RBIG will belong to the relevant WSA or WSAs, with the exception where the WSA or WSAs are deemed not to have adequate capacity. In such circumstances ownership will be given to a water board or temporarily given to DWA;
- Institutional commitment: Roles and responsibilities for sustainable management must be agreed upon and proven through service provider contracts;
- Water licensing and environmental acceptability: All projects must have approved water licences in place for the full water requirement of the scheme and must comply with environmental conditions and requirements;
- Compliance with water conservation measures: All projects must prove that water loss reduction and water demand management options have been implemented satisfactorily to warrant further water supply augmentation;
- Acceptable asset management plans and systems: All projects must demonstrate adequate steps to ensure long-term sustainable operation and maintenance of the infrastructure assets (including asset management plans and systems). This fund is not to be used to encourage poor asset management by financing infrastructure that is not needed yet;
- Referenced in the IDP and WSDP: All projects must be aligned with and listed in the WSDP and IDPs of participating authorities. Such alignment will be confirmed by the project feasibility studies and checked by the project assessment panel; and
- All proposed projects must identify and specify the amount of anticipated involvement and benefit of SMMEs and BEE enterprises.

Currently, projects are selected by the Provincial Adjudication Committee on merit. The following criteria are amongst those that are applied to evaluate and prioritize project proposals:

- General criteria (screening), e.g. compliance with Division of Revenue Act
- Prioritization criteria, specifically strategic importance
- Social criteria
- Economic criteria

- Technical criteria
- Institutional criteria
- Financial criteria
- Legal criteria
- Sustainability criteria

For full details of these criteria see Water Services Regional Bulk Infrastructure Programme – Framework for Implementation, DWA, June 2010.

Rules of the Grant include that:

- The project must be proposed by a suitable water services institution.
- The project must take into account the Integrated Development Plan (IDP) of municipalities, prepared in accordance with the Municipal Systems Act, especially the water services development plans (WSDP).
- Infrastructure developed or obtained through the Grant must be owned by a relevant WSA, a combination of a number of WSAs or a water board.

According to National Treasury the institution that raises funding for the dam and associated regional water supply scheme should generally be the owner of the scheme. The owner of the proposed regional water supply scheme should accordingly lead the RBIG application process. Support in preparing the application can be given by DWA.

The DWA's Director General is the transferring national officer responsible for the implementation of the Grant. The Grant provides funding for feasibility studies and other studies required to prepare an application for funding.

5.3 Option 3: A Regional Water Utility as Implementing Agent

The third option considers the fact that the Minister may decide that DWA or TCTA should not to manage the construction of the dam in-house. In that case DWA/OR Tambo DM could appoint Amatola Water (or Umgeni Water) as an implementing agent to manage the construction on its behalf.

According to the Water Services Act, construction of a dam as an implementing agent would be a non-core function of the water board. However, DWA is currently revising and consolidating the National Water Act and Water Services Act. As explained above, it is

envisaged that water boards will be consolidated into Regional Water Utilities and that their role will be expanded.

As Implementing Agent, the water board would construct the dam and/or bulk treatment and distribution works for a fee and would recover the full cost of the works as a stand-alone or ring-fenced project. In other words, there would be a requirement for either grant funding from National Government and/or a firm repayment agreement with OR Tambo DM which would together cover the full cost of the works. Such agreements would be independent of the ability of OR Tambo DM to recover the cost of the works from consumer tariffs as that would not be a matter within the water board's control.

The financial risk would not be passed onto the water board and there would accordingly be no funding/financial advantage in this option.

The only advantage of this option would be that a skilled and experienced implementing agent manages the procurement and construction of the works.

The possibility of a water board owning and funding the dam is discussed as Option 4 below.

5.4 OPTION 4: A WATER BOARD AS BULK POTABLE WATER SERVICE PROVIDER

According to the Water Services Act, the core function of Amatola Water and Umgeni Water is to provide bulk potable water services to other water services institutions. Both Amatola Water and Umgeni Water do, however, operate a number of dams for the Department of Water Affairs. The fourth funding alternative is that one of these water boards is appointed as a bulk potable water service provider to own and operate the LRWSS.

As discussed above, the NWRS-2 recognises that existing water boards such as Amatola and Umgeni will be consolidated into Regional Water Utilities, which would have an important role to play in developing and operating both bulk water services infrastructure as well as regional water resources infrastructure.

Discussions have confirmed that Amatola Water is seen by OR Tambo DM as an Eastern Cape water board and would be the preferred water board by OR Tambo DM, all else

being equal. However, it is equally clear that Umgeni Water currently has greater capacity to implement such a project than Amatola Water.

Such a funding and institutional arrangement could involve the following:

- The selected water board (or Regional Water Utility) could apply to utilise Regional Bulk Infrastructure Grant (RBIG) funding to partially offset the costs of upgrading the treatment plant and distribution infrastructure and the construction of the dam.
- The Minister could mandate the water board to develop and operate the Zalu Dam as an element of the Regional Water Resources infrastructure. In addition, the water board could conclude a WSP agreement with OR Tambo DM in terms of which the water board would own and operate the treatment works and bulk distribution pipelines as part of the water board's supply system and would charge OR Tambo DM a system tariff, mitigated by any grant funding received.

The involvement of the water board as owner of the dam and water treatment works should have the additional advantage of facilitating an improvement in the maintenance of the regional water supply scheme and should contribute towards reducing the non-revenue water component.

The disadvantage for a Regional Water Utility would be the risk of OR Tambo DM not collecting billable water revenue and not allocating sufficient Equitable Share to subsidize those households that cannot pay for water.

National Treasury has indicated that they would generally need to confirm to what extent a water board could absorb the economic portion of such an investment on their balance sheet.

Although preliminary discussions have been held with officials from both OR Tambo DM and Amatola Water, this option must now be discussed at a board and council (Water Portfolio Committee) level with both the water boards and with OR Tambo DM.

5.5 OPTION 5: DWA AS IMPLEMENTING AGENT AND FUNDER

Option 5 explores two alternative ways in which DWA could fund Zalu Dam on budget.

Firstly, DWA could construct the Zalu Dam as a Government Waterworks.

The implication would be that DWA would, in cooperation with National Treasury, provide funds for the project on budget, retain ownership of the works, and either operate the dam itself or, as is the case with Midmar Dam and other dams in the Umgeni Water and Amatola Water areas of jurisdiction, arrange for a Regional Water Utility to operate the dam on its behalf under contract. Ownership would however remain with DWA.

Zalu Dam is however not a dam that is interlinked to a system of dams, nor is it a dam of national strategic importance in that it does not supply power stations (Eskom), the petro-chemical industry (SASOL) or major metropolitan areas. Consequently, Zalu Dam does not fit the ideal definition of national water infrastructure.

However, during consultation with members of DWA management, it was made clear that there are a number of strategic reasons for DWA to retain ownership of not only dams that could be classified as national water resource infrastructure, but also dams which could be classified as regional dams. Ownership of both national and regional dams would enable the Minister to ensure proper regulation and allocation of the water resource as well as dam safety.

The Minister could alternatively direct TCTA to implement the dam. TCTA has already developed the required institutional capacity to undertake this type of project.

Even if DWA or TCTA implemented the dam, DWA would also not necessarily wish to operate the dam itself. It is also unlikely that TCTA in its current institutional form would be directed to operate the dam. However, if TCTA had already been merged into a new institutional arrangement with the mandate to operate dams then this would become an option.

Given the policy preferences expressed by the NWRS-2 for expanding the role of water boards in bulk water services provision, and given that both Amatola Water, being an Eastern Cape Water Board and as such preferred by OR Tambo DM, and Umgeni Water are currently operating and maintaining dams, DWA could contract with either water board to operate the dam on its behalf.

6 IMPACT OF REGIONAL WATER SUPPLY SCHEME ON WATER TARIFFS

The impact of the scheme on the water tariff of OR Tambo DM depends on how the dam is funded.

If the dam is funded off-budget, i.e. by private sector loan funding, then the tariff would include the cost of redeeming the loan (capital and interest loan repayments) as well as operation and maintenance costs.

If the dam is funded on budget by the Government then the tariff will be determined in accordance with DWA's National Water Pricing Strategy as published in Government Gazette No. 29697 of 16 March 2007. The tariff would include a depreciation charge, a return on assets charge of 4% p.a. as well as the operation and maintenance costs.

However if the dam is funded by Umgeni Water and incorporated into their bulk water system then the dam will have an effect on the Umgeni Water universal bulk water charge (i.e. the tariff charged to all bulk water users) but will not be a specific charge levied on OR Tambo DM. OR Tambo DM would pay the Umgeni Water universal charge.

Amatola Water has a smaller consumer/user base than Umgeni Water and will probably need to recover costs on a scheme-by-scheme basis.

Preliminary financial calculations show that:

If the **Lusikisiki RWSS, comprising a 8.1 million m³ storage (FSL 612 masl) Zalu Dam,** costing a total of **R 1 100.963 million (2013 Rand Value)** is fully funded by private sector loan funding then the cost of water from the scheme to repay the debt and the operation costs would be in the order of **R 18.44 per kℓ** in 2013 Rands.

If the **Lusikisiki RWSS, comprising a 19.9 million m³ storage (FSL 622.6 masl) Zalu Dam,** costing a total of **R 1 328.624 million (2013 Rand Value)** is fully funded by private sector loan funding then the cost of water from the scheme to repay the debt and the operations costs would be in the order of **R 21.52 per kℓ** in 2013 Rands.

If the Lusikisiki RWSS is funded primarily by san and only 25% of the funding is funded off-budget and only that 25% of the capital cost needs to be recovered, together with the full operating costs, then the tariff would be in the order of **R 7.56 or R 8.39 per kℓ** in 2013 Rands depending on whether the 8.1 million m³ (FSL 612 m) or 19.9 million m³ (FSL 622.6 m) Zalu Dam is constructed.

However, if 100% of the capital portion of the Lusikisiki RWSS is funded with grant funding and no off-budget funding is utilised, and if only the operating costs were to be recovered through the tariff, then the tariff would be in the order of **R 4.07 or R 4.17 per kℓ** in 2013 Rands, depending on whether the 8.1 million m³ (FSL 612 m) or 19.9 million m³ (FSL 622.6 m) Zalu Dam is constructed.

It appears that it would not be affordable for the relatively poor community to repay the scheme if it were funded privately. The scheme should be funded with grant funding, either provided on the DWA budget or through the RBIG grant system.

The preliminary financial calculations are attached as **Appendix A**.

7 LEGAL ASSESSMENT

7.1 RESPONSIBILITIES IN TERMS OF THE NATIONAL WATER ACT 36 OF 1998

The National Water Act, Act 36 of 1998 requires, inter alia, that:

- The owner of the proposed Lusikisiki Dam obtains a water use licence before disturbing the water course and constructing the dam. In terms of Section 21 of the National Water Act, taking water from a water resource, storing water and impeding or diverting the flow of water in a water course are all water uses.
- The Minister determines a preliminary reserve for the water course before the water use licence is issued;
- The owner of the proposed dam appoints an Approved Professional Person to report to the Minister on the safety of the dam.
- The owner of the proposed dam appoints an Approved Professional Person to design the dam; and
- The owner of the proposed dam registers the dam as a dam with a safety risk.

It can be seen that the onus for the licence application and for appointing the approved professional person(s) rests with the owner of the dam.

For purposes of addressing the National Water Act requirements, the owner of the dam must consequently be confirmed early in the implementation process.

The RBIG application also requires the early confirmation of which institution is the owner of the dam.

Chapter 11 of the National Water Act gives the Minister the power to establish and operate Government Waterworks in the public interest out of funds allocated by Parliament or from other sources. While the Minister has this discretion regardless of the size or the nature of the works, there does not appear to be a strong motivation for the dam to be owned by National Government. The dam is a local dam and is not interlinked into a system of waterworks, nor is it of national importance.

Accordingly it is recommended that either a water board or OR Tambo DM must take early ownership of the dam and, with the assistance of DWA, make the necessary water

use licence applications and ensure the appointment of the Approved Professional Person.

Selected abstracts from the National Water Act are provided in **Appendix B**.

The above recommendations and abstracts are merely a high level summary and should be read in the context of the full Act and its regulations.

7.2 RESPONSIBILITIES IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT

Chapter 5 of the National Environmental Management Act 107 of 1998 provides for Integrated Environmental Management.

Section 24 of the Act provides that the potential consequences for or impacts on the environment of listed activities or specified activities must be considered, investigated, assessed and reported on by a registered environmental assessment practitioner to the competent authority or the Minister of Minerals and Energy.

Section 24 also provides for the Minister to lay down the procedure to be followed for the preparation, evaluation and adoption of prescribed environmental management instruments, including inter alia environmental impact assessments; environmental risk assessments; environmental feasibility assessments; etc.

In essence the Act requires that the owner of a listed activity, which includes an institution which wishes to construct a dam, must undertake an impact assessment of that potential dam in accordance with procedures gazetted by the Minister or MEC and obtain the authorisation of the Minister or MEC as the case may be before proceeding with the construction of that dam.

Selected abstracts of Chapter 5 of the National Environmental Management Act are provided in **Appendix C**.

7.3 CONSIDERATIONS IN TERMS OF THE WATER SERVICES ACT 108 OF 1997

Section 19 of the Water Services Act does give preference to water boards as water services providers over private sector providers.

19 Contracts and joint ventures with water services providers

(1) A water services authority-

(a) may perform the functions of a water services provider itself; and

(b) may-

(i) enter into a written contract with a water services provider; or

(ii) form a joint venture with another water services institution,

to provide water services.

(2) A water services authority may only enter into a contract with a private sector water services provider ***after it has considered all known public sector water services providers which are willing and able to perform the relevant functions****.*

The primary function of water boards is to serve other water services institutions such as water services authorities.

29 Primary activity of water boards

The primary activity of a water board is to provide water services to other water services institutions within its service area.

A water services authority and water board must enter into a contract if that water board is to provide services to the water services authority.

32 Duties of water boards

Every water board-

(a) must give priority to its primary activity;

(b) must enter into written contracts when performing its primary and other activities;

(c) must consider every request by a water services institution for the provision of water services within its service area and may only refuse such request if, for sound technical and financial reasons, it would not be viable to provide those water services;

(d) must provide water services and other services to water services institutions, consumers and users in accordance with section 4 and any conditions set in terms of section 33; and

(e) must obtain a permit, authorisation or licence from the relevant authority for abstracting water or discharging any effluent.

The Minister can give a directive to a water board which may include acting as Implementing Agent for the construction of a dam. The Minister gives similar directives to TCTA to construct waterworks.

41 Directives to water boards

(1) The Minister may, to the extent that it is reasonable, from time to time issue directives to a water board-

(a) to undertake a specific activity-

(i) at its own cost where the activity is financially viable; or

(ii) against full or partial payment, as directed by the Minister; or

(b) to desist from a specific activity if that activity-

(i) is not in the best interests of the general population within its service area; or

(ii) is not in accordance with the parameters laid down in section 34 (1).

(2) The water board must comply with any directive given under subsection (1).

7.4 ACQUISITION OF COMMUNAL LAND IN THE DAM BASIN

The Land Affairs Act 101 of 1987 provides for the establishment of a Land Affairs Board.

The function of the Board is to determine amounts of compensation, purchase prices or rent in respect of immovable property expropriated, purchased or leased by the Department of Public Works and Land Affairs for public purposes; and the giving of advice with regard to the value of land, rights on or in respect of land and purchase prices or rent in respect of certain immovable property.

The Board may also advise the Minister of Water and Environmental Affairs on the amount of compensation to pay for land that DWA wishes to expropriate in the dam basin.

Section 6 provides for the functions of the Land Affairs Board.

6 Functions of board

(1) Subject to the directions of the Minister, the board shall determine the amounts of compensation, purchase prices or rents payable in respect of immovable property which is expropriated, purchased or leased by the Department for public purposes, out of moneys appropriated by Parliament for that purpose: Provided that the Minister may in certain cases assign the power of decision regarding the determination of such rents to officers of the Department.

(2) Subject to the directions of the Minister, ***the board may advise any other Minister, the Department and any other department of State or Administration, and any other statutory body or body corporate, with regard to-***

(a) the value of land and the rights on or in respect of land;

(b) amounts of compensation, purchase prices, rents or other amounts which in the opinion of the board ought to be paid when immovable property is expropriated, or a right to use such property temporarily is taken, or such property is purchased or otherwise acquired or leased, by any such Minister, department, Administration or body; and

(c) the amounts which in the opinion of the board ought to be paid when immovable property is alienated, let or otherwise disposed of by any such Minister, department, Administration or body.

8 ASSESSMENT AND MITIGATION OF RISKS

The major risk is the time that it will take to obtain the various authorisations, to conclude agreements and to obtain funding. These include:

- Preparing the application and obtaining approval for RBIG funding;
- Preparing the application and obtaining approval for water storage and abstraction licences;
- Completing an environmental impact assessment including public consultation and obtaining environmental authorisation; and
- Obtaining council and board resolutions for OR Tambo DM and either Umgeni Water or Amatola Water to enter into formal agreements and negotiating the details of such agreements.

A mitigating action would be for the three parties (OR Tambo DM, the selected water board and DWA) to take a number of binding decisions/resolutions very early in the process.

9 RECOMMENDATIONS AND THE WAY FORWARD

The following is recommended:

- DWA should firstly decide whether the Zalu Dam should be owned nationally or by a water board (future Regional Water Utility).
- DWA should secondly decide whether DWA, TCTA or a water board (a future Regional Water Utility) should implement the Zalu Dam.
- National Treasury should be approached to fund the cost of the dam, either by means of a dedicated grant through the DWA budget or through the RBIG.
- DWA, OR Tambo DM and a water board (either Amatola Water or Umgeni Water) should negotiate and agree on ownership and contractual arrangements for the development and the operation of the water treatment works and bulk distribution works.
- The agreed owner of the water treatment works should be directed to apply for RBIG funding for the water treatment works and bulk distribution works.
- Consultation should be held with National Treasury, within DWA Regional and Head Office, with OR Tambo DM's Water Portfolio Committee and with either Amatola Water or Umgeni Water to confirm that the above recommendations are acceptable to all parties and formal contracts should be concluded.

National Treasury has confirmed that ownership of infrastructure and responsibility for funding are generally inseparable. A commercial funder and/or the RBIG adjudication committee would expect the application for grant funding to be lodged by the proposed owner of the proposed infrastructure.

If it is decided that DWA should take ownership of the Zalu Dam and that a water board should take ownership of the water treatment works and bulk distribution works then the link between funding and ownership should be clearly communicated so that the two separate applications for funding are properly co-ordinated.

10 REFERENCES

Hill Kaplan Scott, 1986. Lusikisiki Regional Water Supply Scheme: Preliminary Report

Land Affairs Act 101 of 1987

National Environmental Management Act 107 of 1998

National Water Act, Act 36 of 1998

Water Services Act 108 of 1997

Appendix A

Order of magnitude financial calculations

Lusikisiki Regional Water Supply Scheme
Zalu Dam at RL 612 m

100% Commercial Loan Real interest rate 3.30%

	Estimated Cost Zalu Dam FSI 612	Estimated Cost (Bulk Water Infrastructure)		Operations costs			Total disbursements 2013 Rands	RBIG contribution 2013 Rands	Inflation	Bulk water delivered	Tariff	Revenue	Disbursements after RBIG contributions Nominal Rands	Beginning Year Debt	Interest	End Year Debt
	(R'000)	(R'000)	(R'000)	(R'000)	(R'000)	(R'000)	(R'000)	0%	6%	Kl'000	R 21.52				9.50%	
		Bulk(WTW + Pipelines)	GW	Dam 0.25% per year	Energy Cost	Bulk 2% per year										
2013							0	0.00	1.00	0	21.52	0	0	0	0	0
2014							0	0.00	1.06	0	22.82	0	0	0	0	0
2015							0	0.00	1.12	0	24.19	0	0	0	0	0
2016							0	0.00	1.19	0	25.64	0	0	0	0	0
2017	238 193	201 632	9 147				448 973	0.00	1.26	0	27.17	0	566 818	0	0	566 818
2018	238 193	201 632					439 826	0.00	1.34	0	28.80	0	588 586	566 818	53 848	1 209 251
2019	238 193	201 632					439 826	0.00	1.42	0	30.53	0	623 901	1 209 251	114 879	1 948 031
2020				1 191	2 437	12 098	15 726	0.00	1.50	3 767	32.37	121 920	23 646	1 948 031	185 063	2 034 820
2021				1 191	2 474	12 098	15 763		1.59	3 832	34.31	131 465	25 124	2 034 820	193 308	2 121 787
2022				1 191	2 510	12 098	15 799		1.69	3 897	36.37	141 717	26 692	2 121 787	201 570	2 208 332
2023				1 191	2 553	12 098	15 842		1.79	3 962	38.55	152 725	28 370	2 208 332	209 791	2 293 768
2024				1 191	2 595	12 098	15 884		1.90	4 027	40.86	164 545	30 152	2 293 768	217 908	2 377 284
2025				1 191	2 637	12 098	15 926		2.01	4 092	43.31	177 233	32 046	2 377 284	225 842	2 457 939
2026				1 191	2 680	12 098	15 969		2.13	4 166	45.91	191 255	34 061	2 457 939	233 504	2 534 248
2027				1 191	2 722	12 098	16 011		2.26	4 240	48.67	206 322	36 199	2 534 248	240 754	2 604 879
2028				1 191	2 770	12 098	16 059		2.40	4 313	51.59	222 508	38 486	2 604 879	247 464	2 668 321
2029				1 191	2 818	12 098	16 107		2.54	4 387	54.68	239 894	40 917	2 668 321	253 490	2 722 834
2030				1 191	2 866	12 098	16 155		2.69	4 461	57.96	258 565	43 501	2 722 834	258 669	2 766 440
2031				1 191	2 914	12 098	16 203		2.85	4 545	61.44	279 240	46 249	2 766 440	262 812	2 796 260
2032				1 191	2 962	12 098	16 251		3.03	4 629	65.13	301 465	49 169	2 796 260	265 645	2 809 609
2033				1 191	3 016	12 098	16 305		3.21	4 713	69.03	325 352	52 292	2 809 609	266 913	2 803 462
2034		57 179		1 191	3 071	12 098	73 539		3.40	4 797	73.17	351 019	250 000	2 803 462	266 329	2 968 772
2035				1 191	3 126	12 098	16 415		3.60	4 881	77.57	378 596	59 152	2 968 772	282 033	2 931 361
2036				1 191	3 180	12 098	16 469		3.82	4 977	82.22	409 221	62 907	2 931 361	278 479	2 863 526
2037				1 191	3 235	12 098	16 524		4.05	5 073	87.15	442 159	66 904	2 863 526	272 035	2 760 307
2038				1 191	3 297	12 098	16 586		4.29	5 170	92.38	477 575	71 185	2 760 307	262 229	2 616 145
2039				1 191	3 360	12 098	16 649		4.55	5 266	97.92	515 650	75 742	2 616 145	248 534	2 424 771
2040				1 191	3 422	12 098	16 711		4.82	5 362	103.80	556 575	80 586	2 424 771	230 353	2 179 136
2041				1 191	3 422	12 098	16 711		5.11	5 400	110.03	594 150	85 421	2 179 136	207 018	1 877 424
2042				1 191	3 422	12 098	16 711		5.42	5 400	116.63	629 799	90 546	1 877 424	178 355	1 516 527
2043				1 191	3 422	12 098	16 711		5.74	5 400	123.63	667 587	95 979	1 516 527	144 070	1 088 988
2044				1 191	3 422	12 098	16 711		6.09	5 400	131.04	707 642	101 738	1 088 988	103 454	586 538
2045				1 191	3 422	12 098	16 711		6.45	5 400	138.91	750 101	107 842	586 538	55 721	0

Lusikisiki Regional Water Supply Scheme
Zalu Dam at RL 612 m

75% Grant Funding
25% Loan Funding

Real interest rate: 3.30%

	Estimated Cost Zalu Dam FSl 612	Estimated Cost (Bulk Water Infrastructure)		Operations costs			Total disbursements 2013 Rands	RBIG contribution 2013 Rands	Inflation	Bulk water delivered	Tariff	Revenue	Disbursements after RBIG contributions Nominal Rands	Beginning Year Debt	Interest	End Year Debt
	(R'000)	(R'000)	(R'000)	(R'000)	(R'000)	(R'000)	(R'000)	75%	6%	Kl'000	R 8.39				9.50%	
		Bulk(WTW + Pipelines)	GW	Dam 0.25% per year	Energy Cost	Bulk 2% per year										
2013							0	0.00	1.00	0	8.39	0	0	0	0	0
2014							0	0.00	1.06	0	8.89	0	0	0	0	0
2015							0	0.00	1.12	0	9.43	0	0	0	0	0
2016							0	0.00	1.19	0	9.99	0	0	0	0	0
2017	238 193	201 632	3 049				442 875	332 156.00	1.26	0	10.59	0	139 780	0	0	139 780
2018	238 193	201 632	3 049				442 875	332 156.00	1.34	0	11.23	0	148 167	139 780	13 279	301 225
2019	238 193	201 632	3 049				442 875	332 156.00	1.42	0	11.90	0	157 057	301 225	28 616	486 898
2020				1 191	2 437	12 098	15 726		1.50	3 767	12.62	47 530	23 646	486 898	46 255	509 270
2021				1 191	2 474	12 098	15 763		1.59	3 832	13.37	51 251	25 124	509 270	48 381	531 523
2022				1 191	2 510	12 098	15 799		1.69	3 897	14.18	55 248	26 692	531 523	50 495	553 461
2023				1 191	2 553	12 098	15 842		1.79	3 962	15.03	59 539	28 370	553 461	52 579	574 871
2024				1 191	2 595	12 098	15 884		1.90	4 027	15.93	64 147	30 152	574 871	54 613	595 489
2025				1 191	2 637	12 098	15 926		2.01	4 092	16.89	69 094	32 046	595 489	56 571	615 013
2026				1 191	2 680	12 098	15 969		2.13	4 166	17.90	74 560	34 061	615 013	58 426	632 940
2027				1 191	2 722	12 098	16 011		2.26	4 240	18.97	80 434	36 199	632 940	60 129	648 834
2028				1 191	2 770	12 098	16 059		2.40	4 313	20.11	86 744	38 486	648 834	61 639	662 215
2029				1 191	2 818	12 098	16 107		2.54	4 387	21.32	93 522	40 917	662 215	62 910	672 521
2030				1 191	2 866	12 098	16 155		2.69	4 461	22.60	100 801	43 501	672 521	63 890	679 112
2031				1 191	2 914	12 098	16 203		2.85	4 545	23.95	108 861	46 249	679 112	64 516	681 015
2032				1 191	2 962	12 098	16 251		3.03	4 629	25.39	117 525	49 169	681 015	64 696	677 355
2033				1 191	3 016	12 098	16 305		3.21	4 713	26.91	126 837	52 292	677 355	64 349	667 159
2034		57 179		1 191	3 071	12 098	73 539		3.40	4 797	28.53	136 844	250 000	667 159	63 380	843 695
2035				1 191	3 126	12 098	16 415		3.60	4 881	30.24	147 594	59 152	843 695	80 151	835 404
2036				1 191	3 180	12 098	16 469		3.82	4 977	32.05	159 533	62 907	835 404	79 363	818 141
2037				1 191	3 235	12 098	16 524		4.05	5 073	33.98	172 374	66 904	818 141	77 723	790 394
2038				1 191	3 297	12 098	16 586		4.29	5 170	36.01	186 181	71 185	790 394	75 087	750 485
2039				1 191	3 360	12 098	16 649		4.55	5 266	38.18	201 024	75 742	750 485	71 296	696 499
2040				1 191	3 422	12 098	16 711		4.82	5 362	40.47	216 979	80 586	696 499	66 167	626 274
2041				1 191	3 422	12 098	16 711		5.11	5 400	42.89	231 627	85 421	626 274	59 496	539 563
2042				1 191	3 422	12 098	16 711		5.42	5 400	45.47	245 525	90 546	539 563	51 259	435 843
2043				1 191	3 422	12 098	16 711		5.74	5 400	48.20	260 257	95 979	435 843	41 405	312 970
2044				1 191	3 422	12 098	16 711		6.09	5 400	51.09	275 872	101 738	312 970	29 732	168 568
2045				1 191	3 422	12 098	16 711		6.45	5 400	54.15	292 424	107 842	168 568	16 014	0

Appendix B

Selected extracts from the

National Water Act 36 of 1998

Selected extracts from National Water Act 36 of 1998

17 Preliminary determinations of Reserve

(1) Until a system for classifying water resources has been prescribed or a class of a water resource has been determined, the Minister-

(a) may, for all or part of a water resource; and

(b) must, before authorising the use of water under section 22 (5),

make a preliminary determination of the Reserve.

21 Water use

For the purposes of this Act, water use includes-

(a) taking water from a water resource;

(b) storing water;

(c) impeding or diverting the flow of water in a watercourse;

(d) .....

27 Considerations for issue of general authorisations and licences

(1) In issuing a general authorisation or licence a responsible authority must take into account all relevant factors, including-

(a) existing lawful water uses;

(b) the need to redress the results of past racial and gender discrimination;

(c) efficient and beneficial use of water in the public interest;

(d) the socio-economic impact-

(i) of the water use or uses if authorised; or

(ii) of the failure to authorise the water use or uses;

(e) any catchment management strategy applicable to the relevant water resource;

(f) the likely effect of the water use to be authorised on the water resource and on other water users;

(g) the class and the resource quality objectives of the water resource;

(h) investments already made and to be made by the water user in respect of the water use in question;

(i) the strategic importance of the water use to be authorised;

(j) the quality of water in the water resource which may be required for the Reserve and for meeting international obligations; and

(k) the probable duration of any undertaking for which a water use is to be authorised.

(2) .....

28 Essential requirements of licences

(1) A licence must specify-

(a) the water use or uses for which it is issued;

(b) the property or area in respect of which it is issued;

(c) the person to whom it is issued;

(d) the conditions subject to which it is issued;

(e) the licence period, which may not exceed forty years; and

(f) the review periods during which the licence may be reviewed under section 49, which must be at intervals of not more than five years.

40 Application for licence

(1) A person who is required or wishes to obtain a licence to use water must apply to the relevant responsible authority for a licence.

(2) ....

CHAPTER 12

SAFETY OF DAMS (ss 117-123)

117 Definitions

In this Chapter-

(a) 'approved professional person' means a person registered in terms of the Engineering Profession of South Africa Act, 1990 (Act 114 of 1990), and approved by the Minister after consultation with the Engineering Council of South Africa (established by section 2 of that Act);

(b) 'dam' includes any existing or proposed structure which is capable of containing, storing or impounding water (including temporary impoundment or storage), whether that water contains any substance or not;

(c) 'dam with a safety risk' means any dam-

(i) which can contain, store or dam more than 50 000 cubic metres of water, whether that water contains any substance or not, and which has a wall of a vertical height of more than five metres, measured as the vertical difference between the lowest downstream ground elevation on the outside of the dam wall and the non-overspill crest level or the general top level of the dam wall;

(ii) .....

118 Control measures for dam with safety risk

(1) The owner of a dam must-

(a) within the period specified, provide the Minister with any information, drawings, specifications, design assumptions, calculations, documents and test results requested by the Minister; or

(b) give any person authorised by the Minister access to that dam, to enable the Minister to determine whether-

(i) that dam is a dam with a safety risk;

(ii) .....

120 Registration of dam with safety risk

(1) The owner of a dam with a safety risk must register that dam.

(2) An application for registration must be made within 120 days-

(a) after the date on which the dam with a safety risk becomes capable of containing, storing or impounding water.....

Appendix C

Selected extracts from the National Environmental Management Act 107 of 1998

Selected extracts from the National Environmental Management Act 107 of 1998

CHAPTER 5

INTEGRATED ENVIRONMENTAL MANAGEMENT (ss 23-24R)

23 General objectives

(1) The purpose of this Chapter is to promote the application of appropriate environmental management tools in order to ensure the integrated environmental management of activities.

(2) The general objective of integrated environmental management is to-

(a) ....;

(b) identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management set out in section 2;

(c) ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them;

(d) ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment;

(e) .....

24 Environmental authorisations

(1) In order to give effect to the general objectives of integrated environmental management laid down in this Chapter, the potential consequences for or impacts on the environment of listed activities or specified activities must be considered, investigated, assessed and reported on to the competent authority or the Minister of Minerals and Energy, as the case may be, except in respect of those activities that may commence without having to obtain an environmental authorisation in terms of this Act.

(1A) Every applicant must comply with the requirements prescribed in terms of this Act in relation to-

(a) steps to be taken before submitting an application, where applicable;

(b) any prescribed report;

(c) any procedure relating to public consultation and information gathering;

(d) any environmental management programme;

(e) the submission of an application for an environmental authorisation and any other relevant information; and

(f) the undertaking of any specialist report, where applicable.

(2) The Minister, or an MEC with the concurrence of the Minister, may identify-

(a) activities which may not commence without environmental authorisation from the competent authority;

(b) .....

(4) Procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment-

(a) must ensure, with respect to every application for an environmental authorisation-

(i) coordination and cooperation between organs of state in the consideration of assessments where an activity falls under the jurisdiction of more than one organ of state;

(ii) that the findings and recommendations flowing from an investigation, the general objectives of integrated environmental management laid down in this Act and the principles of environmental management set out in section 2 are taken into account in any decision made by an organ of state in relation to any proposed policy, programme, process, plan or project;

(iii) that a description of the environment likely to be significantly affected by the proposed activity is contained in such application;

(iv) investigation of the potential consequences for or impacts on the environment of the activity and assessment of the significance of those potential consequences or impacts; and

(v) public information and participation procedures which provide all interested and affected parties, including all organs of state in all spheres of government

that may have jurisdiction over any aspect of the activity, with a reasonable opportunity to participate in those information and participation procedures; and

(b) must include, with respect to every application for an environmental authorisation and where applicable-

(i) investigation of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity;

(ii) investigation of mitigation measures to keep adverse consequences or impacts to a minimum;

(iii) investigation, assessment and evaluation of the impact of any proposed listed or specified activity on any national estate referred to in section 3 (2) of the National Heritage Resources Act, 1999 (Act 25 of 1999), excluding the national estate contemplated in section 3 (2) (i) (vi) and (vii) of that Act;

(iv) reporting on gaps in knowledge, the adequacy of predictive methods and underlying assumptions, and uncertainties encountered in compiling the required information;

(v) investigation and formulation of arrangements for the monitoring and management of consequences for or impacts on the environment, and the assessment of the effectiveness of such arrangements after their implementation;

(vi) consideration of environmental attributes identified in the compilation of information and maps contemplated in subsection (3); and

(vii) provision for the adherence to requirements that are prescribed in a specific environmental management Act relevant to the listed or specified activity in question.

(4A) ....

(5) The Minister, or an MEC with the concurrence of the Minister, may make regulations consistent with subsection (4)-

(a) laying down the procedure to be followed in applying for, the issuing of, and monitoring compliance with, environmental authorisations;

(b) laying down the procedure to be followed in respect of-

(i) the efficient administration and processing of environmental authorisations;

(ii) fair decision-making and conflict management in the consideration and processing of applications for environmental authorisations;

(iii) .....

....

(vii) consultation with land owners, lawful occupiers and other interested or affected parties;

.....

(bA) laying down the procedure to be followed for the preparation, evaluation and adoption of prescribed environmental management instruments, including-

(i) environmental management frameworks;

(ii) strategic environmental assessments;

(iii) environmental impact assessments;

(iv) environmental management programmes;

(v) environmental risk assessments;

(vi) environmental feasibility assessments;

(vii) norms or standards;

(viii) .....

(e) specifying that specified tasks performed in connection with an application for an environmental authorisation may only be performed by an environmental assessment practitioner registered in accordance with the prescribed procedures;

(f) requiring that competent authorities maintain a registry of applications for, and records of decisions in respect of, environmental authorisations;

....

(h) prescribing minimum criteria for the report content for each type of report and for each process that is contemplated in terms of the regulations in order to ensure a consistent quality and to facilitate efficient evaluation of reports;

(i) prescribing review mechanisms and procedures including criteria for, and responsibilities of all parties in, the review process; and

.....