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Department: Water Affairs **REPUBLIC OF SOUTH AFRICA** DIRECTORATE: NATIONAL WATER RESOURCE PLANNING

Development of a Reconciliation Strategy for the Levuvhu and Letaba Water Supply System

WATER CONSERVATION AND WATER DEMAND MANAGEMENT STRATEGY AND BUSINESS PLAN REPORT MOPANI DISTRICT MUNICIPALITY

Luvuvhu / Mutale

Klein Letaba

Groot Letaba

Shingwedzi



ower Letaba

DEVELOPMENT OF A RECONCILIATION STRATEGY FOR THE LUVUVHU AND LETABA WATER SUPPLY SYSTEM

Water Conservation and Water Demand Management Strategy and Business Plan Report

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DEVELOPMENT OF A RECONCILIATION STRATEGY FOR THE LUVUVHU AND LETABA WATER SUPPLY SYSTEM

Water Conservation and Water Demand Management Strategy and Business Plan Report

EXECUTIVE SUMMARY

The Department of Water Affairs (DWA) has identified the need for the Reconciliation Study for the Luvuvhu-Letaba WMA. The WMA is almost fully developed and demands from the Letaba River currently exceed the yield capability of the system. Regulation for the Letaba WMA is mainly provided by Middle Letaba, Ebenezer and Tzaneen Dams. In the Luvuvhu WMA, the recently completed Nandoni Dam will be used in combination with Albasini, Vondo and Damani dams to be managed as one system. It is expected that the total yield from this combined system will be fully utilized by around 2020, considering only the current planned projected demands. The yield of the Albasini Dam has reduced over the years and as a consequence the dam is over allocated. The Shingwedzi catchment is situated almost entirely in the Kruger National Park and for all practical purposes no sustainable yield is derived from surface flow in the Shingwedzi catchment.

The main objective of the study is to compile a Reconciliation Strategy. This strategy will identify and describe water resource management interventions that may be grouped and phased to jointly form a solution to reconcile the water requirements with the available water for the period up to the year 2040. It will be used to develop water availability assessment methodologies and tools applicable to this area that can be used for decision support as part of future compulsory licensing. The development of the strategy requires reliable information on the water requirements and return flows (wastewater), as well as the available water resources for the current situation and likely future scenarios for a planning horizon of thirty years.

To achieve the above objectives, the following main aspects will be covered in the study:

- Update the current and future urban and agricultural water requirements and return flows;
- Assess the water resources and existing infrastructure;
- Configure the system models (WRSM2005, WRYM, WRPM) in the Study Area at a quaternary catchment scale, or finer where required, in a manner that is suitable for allocable water quantification;
- To firm up on the approach and methodology, as well as modelling procedures, for decision support to the on-going licensing processes;
- To use system models, in the early part of the study, to support allocable water quantifications in the Study Area and, in the latter part of the study, to support on-going licensing decisions, as well as providing information for the development of the Reconciliation Strategy;
- Formulate reconciliation interventions, both structural and administrative/regulatory;
- Document the reconciliation process including decision processes that are required by the

strategy; and

• Conduct stakeholder consultation in the development of the strategy.

WC/WDM

As part of the development of the overall Luvuvhu-Letaba Reconciliation strategy, the WC/WDM component of the study focused on the following key aspects:

- Preparing a baseline of current water losses and potential savings in the Luvuvhu-Letaba WMA;
- Completing WC/WDM performance score cards to identify strengths, weaknesses, opportunities and threats;
- Identifying potential interventions, complete with budgets and time lines;
- Preparing water balance diagrams for the municipalities under investigation, complete with system yields versus demand curves with and without WC/WDM; and
- Developing high level WC/WDM strategies and business plans for the municipalities within the Luvuvhu-Letaba WMA.

The status quo review conducted for the WSAs revealed the following critical challenges existing in the key demand centres, which pose an impediment to service delivery and negatively impact the implementation of WC/WDM in the WMA.

Institutional

- High vacancy levels in the technical departments;
- WC/WDM skills shortages, particularly at the operations and maintenance levels in the WSAs and WSPs;
- Limited training and capacity building to capacitate technical personnel;
- Limited support structures to enable the implementation of WC/WDM;
- Slow and unresponsive supply chain processes;
- Political constituencies that are ill equipped to support the achievement of improved service delivery;
- Inadequate or obscure channel of reporting and communication between the WSAs and WSPs; and
- Poor communication between the technical and financial departments at the WSP level.

Financial

- Uncoordinated tariff setting process;
- Tariffs set neither promote WC/WDM nor reflect the cost of water service provision; and
- Poor understanding of billing process due to limited communication.

Social

- General lack of consumer engagement and participation;
- Absence of coordinated consumer awareness programmes;
- Limited support structures to aid reporting of water related challenges; and

• A generally unhappy an uncooperative consumer base.

Technical

- Poor quality and availability of macro and micro management information;
- Limited bulk metering, sectorisation, zone metering and information analysis;
- Significant infrastructure upgrade backlogs;
- Limited proactive asset maintenance;
- High prevalence of illegal connections in the rural settlements; and
- Limited asset registers that do not fully incorporate or reflect the existing infrastructure.

In view of the challenges noted above arising from the discussions held with the WSAs and WSP', the following recommendations are made:

Institutional Strategy

The key intervention for the WSAs within the Luvuvhu-Letaba WMA will be to address the considerable vacancies or shortages in human resources and skills. Ideally, dedicated individuals or sections should be established in order to drive Water Conservation and Demand Management. Specialised training in WC/WDM is pertinent to support the municipal personnel in undertaking the required water loss reduction activities, particularly at the management level where guidance and leadership is required to drive demand management. It is also crucial that the lines of communication are opened between the different municipal departments in order to aid more efficient access to information, which will allow for more effective and coordinated planning. In this regard, an NRW steering committee comprising of the relevant councillors, finance representatives, communication and the technical department can be established to facilitate improved reporting and management of NRW. Procurement processes during and after the transition period must also be streamlined in order to enable swifter access to support structures required for operations and maintenance tasks, which are necessary to mitigate water losses in the systems.

Social Strategy

Extensive and continuous consumer water education programmes are required which will focus on the community and other key water users, including agricultural users and institutions such as schools, which are potent avenues for the reduction of water losses. The installation of water efficient devices, as well as rain water harvesting; are also avenues which can further be explored for promotion and implementation in different sectors. These devices can aid water loss reduction at the consumer level, particularly in areas where metering and billing cannot immediately be effected, and where cost recovery is very low due to high indigent populations. Structures should also be put in place to support consumers in reporting leakage and other service related complaints. The complaints should be captured electronically in order to allow proper tracking and analysis of water loss contributors and significant problem areas. The political leadership should ideally lead these interventions and provide substantial support in order to improve the sustainability of the community based interventions.

Financial Strategy

As a first step, meter audits should be undertaken for the non-domestic consumers in order to identify unmetered connections and non-functional meters which could, in the short term, significantly improve cost recovery. Furthermore, it is imperative that the tariff setting process include inputs from the technical departments which could assist in making the tariffs increasingly effective in achieving the water use efficiency objectives. National Treasury has been very vocal on the dependency of municipalities on grant funding. It has emphatically expressed the need for municipalities to actively demonstrate a commitment to proper budgeting, planning and cost recovery, with a focus on demand side management as a first step in managing and more effectively utilising the available resources. The aforementioned requires closer monitoring of consumers, particularly the top consumers, as well as an effective system to capture and refer billing related complaints and progressive payment of services in the municipalities, which must be supported and preceded by proper community awareness and education, and widespread public engagement.

Technical Strategy

As a first step, measurement of the system input volumes is required to determine the extent of water losses in the WMA, particularly in the Mopani District. Sectorisation and zone metering and monitoring is also required in the majority of the municipalities in the WMA to aid in the micro management of the system once bulk metering has taken place. The installation of meters is only the first step and will be altogether useless if the information is not captured and monitored on a monthly basis. Proper budgets must also be set aside for proactive infrastructure asset maintenance. There is a substantial maintenance backlog in the municipalities in the WMA, with a significant number of access challenges being caused simply by the age of the existing infrastructure. Passive leak detection through community reporting would greatly enhance the ability of the WSPs to monitor the network and explore potential for pressure management in selected areas experiencing high pipe burst frequencies. The location of infrastructure requires clarification in order to identify aspects of the network which are able to provide services to the consumers. There is a need to develop digital as-built drawings of the network which must be accompanied by the development of a comprehensive asset register incorporating critical information such as the age of the infrastructure, replacement period and cost, as well as the location of the assets. Through such interventions, substantial community-based employment can be created where indigent residents can be appointed and utilised to clean and locate the infrastructure.

Conclusion

Results from the study are summarised as follows:

- There is a large part of the study area which has formal infrastructure, which enables effective metering and billing;
- The average consumption in the urban areas is very high and there is scope for reduction, which is expected to reduce the total demand and non-revenue water;
- The rural areas are characterised by intermittent supply with limited cost recovery and consumers revert to illegal connections to obtain water;

- The average consumption in the rural areas is within the acceptable range but there is huge inequality of supply. Any reduction will be redistributed with limited, or no reduction, in the total demand;
- The water tariffs in certain areas are not cost reflective and do not promote water conservation and water demand management;
- The municipalities lack funding to implement WC/WDM;
- The municipalities require additional staff to address and implement WC/WDM;
- Asset management lacks in some of the areas, which impacts on the assurance of supply; and
- Municipalities are grant dependant and have very high debtors.

Based on the above, the following key strategic focus areas are recommended :

- Raise WC/WDM awareness within the organisation by setting-up a WC/WDM task team, chaired by senior officials or MMC, to meet on monthly basis to address WC/WDM issues;
- Fill vacant positions and provide training and capacity building;
- Improve metering, reading, billing and cost recovery;
- Review the water tariff structure to be most cost reflective and promote WC/WDM;
- Improved tariff structures and cost recovery will increase revenue for the municipality which can be used to address the backlog in maintenance and improve service delivery;
- Implementing metering and cost recovery in the rural areas present several challenges and fixing internal plumbing leakage, using local plumbers, is recommended until such time as the system has stabilised and service delivery has improved;
- Implement awareness campaigns across all consumers to use water efficiently; and improve management information through proper monthly reporting and records keeping. These reports should be discussed at the monthly EXCO meeting.

DEVELOPMENT OF A RECONCILIATION STRATEGY FOR THE LUVUVHU AND LETABA WATER SUPPLY SYSTEM

Water Conservation and Water Demand Management Strategy and Business Plan Report

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APPENDIX A: Mopani DM Strategies and Business Plans

Acronyms

ACRU	Agrohydrological Modelling System
BID	Background Information Documents
СВО	Community Based Organisation
DA	Drainage Area
DM	District Municipality
DPLG	Department of Provincial and Local Government
DWAF	Department of Water Affairs and Forestry
EFR	Environmental Flow Requirement
EMA	Ecological Management Area
GIS	Geographical Information System
GRIP	Groundwater Resource Information Project
IAPs	Interested and Affected Parties
IFR	In Stream Flow Requirements
IWRM	Integrated Water Resource Management
LLRS	Development of Water of a Reconciliation Strategy for the Luvuvhu and Letaba Water Supply System
NGDB	National Groundwater Database
NGO	Non-Governmental Organisation
RWQO	River Water Quality Objectives
SAGDT	South African Groundwater Tool
SSC	Study Steering Committee
STW	Sewer Treatment Works
TDS	Total Dissolved Solids
URV	Unit Reference Value
WC/WDM	Water Conservation and Water Demand Management
WMA	Water Management Area
WRC	Water Research Commission
WRP	WRP Consulting Engineers (Pty) Ltd.
WRSS	Water Reconciliation Strategy Study
WRPM	Water Resources Planning Model
WRYM	Water Resources Yield Model
WSA	Water Service Authority
WSAs	Water Service Authorities
WSP	Water Service Providers

DEVELOPMENT OF A RECONCILIATION STRATEGY FOR THE LUVUVHU AND LETABA WATER SUPPLY SYSTEM

Water Conservation and Water Demand Management Strategy and Business Plan Report

1 INTRODUCTION

1.1 BACKGROUND

The Department of Water Affairs (DWA) has identified the need for the Reconciliation Study for the Luvuvhu-Letaba Water Management Area (WMA). The WMA is almost fully developed and demands from the Letaba River currently exceed the yield capability of the system. Regulation for the Letaba is mainly provided by Middle Letaba, Ebenezer and Tzaneen Dams. The recently completed Nandoni Dam located in the Luvuvhu basin will be used in combination with Albasini, Vondo and Damani dams, to be managed as one system. It is expected that the total yield from this combined system will be fully utilized by around 2020, considering only the current planned projected demands. The yield of the Albasini Dam has reduced over the years and as a consequence the dam is over allocated. The Shinwedzi catchment is situated almost entirely in the Kruger National Park and for all practical purposes, no sustainable yield is derived from surface flow in the Shingwedzi catchment.

The main urban areas in these catchments are Tzaneen and Nkowakowa in the Groot Letaba River catchment, Giyani in the Klein Letaba River catchment and Thohoyandou and Makhado (Louis Trichardt) in the Luvuvhu catchment. An emergency water supply scheme to transfer water from Nandoni Dam is currently under construction to alleviate the deficits of the stressed Middle Letaba sub-system in the Letaba River basin. Other future developments planned to be supplied from Nandoni Dam will utilize the full yield available from the Nandoni sub-system by 2021, without supporting Giyani. Supporting Giyani from Nandoni will bring this date forward to approximately 2018

Intensive irrigation farming is practised in the upper parts of the Klein Letaba River catchment (upstream and downstream of the Middle Letaba Dam), the Groot Letaba (downstream of the Tzaneen Dam) and Letsitele rivers, as well as in the upper Luvuvhu River catchment. Vegetables (including the largest tomato production area in the country), citrus and a variety of sub-tropical fruits such as bananas, mangoes, avocados and nuts are grown. Large areas of the upper catchments have been planted with commercial forests in the high rainfall parts of the Drakensberg escarpment and on the Soutpansberg. The area, particularly the Groot Letaba sub-area, is a highly productive agricultural area with mixed farming, including cattle ranching, game farming, dry land crop production and irrigated cropping. Agriculture, with the irrigation sector in particular, is the main base of the economy of the region. Large scale utilization of the groundwater resource occurs mostly downstream of the Albasini Dam in the Luvuvhu catchment, where it is used by

irrigators as well as in the vicinity of Thohoyandou where it is used to supply rural communities. The limited mineral resources in the Luvuvhu basin are dominated by deposits of coking (metallurgical) coal in the northeast near Masisi. In addition to irrigation water supply from the dams in the study area, the towns, villages and rural settlements are also supplied with potable water.

DWA and other institutions involved in the management of the water resource and supply systems of the Luvuvhu-Letaba catchments have, in the past, carried out various studies on intervention measures to improve the water supply situation. The knowledge base that has been created by these studies provides a sound and essential platform from which the Reconciliation Strategy will be developed. In order to harness this information a Literature Review Report (DWA, 2013) was compiled to summarise the available information in one document and also to present a synthesis of the information by highlighting the pertinent aspects of Integrated Water Resource Management that will be assessed and incorporated in the Reconciliation Strategy.

1.2 MAIN OBJECTIVES OF THE STUDY

The main objective of the study is to compile a Reconciliation Strategy. This strategy will identify and describe water resource management interventions that may be grouped and phased to jointly form a solution to reconcile the water requirements with the available water for the period up to the year 2040. It will be used to develop water availability assessment methodologies and tools applicable to this area that can be used for decision support as part of future compulsory licensing. The development of the strategy requires reliable information on the water requirements and return flows (wastewater), as well as the available water resources for the current situation and likely future scenarios for a planning horizon of thirty years.

To achieve the above objectives, the following main aspects will be covered in the study:

- Update the current and future urban and agricultural water requirements and return flows;
- Assess the water resources and existing infrastructure;
- Configure the system models (WRSM2005, WRYM, WRPM) in the Study Area at a quaternary catchment scale, or finer where required, in a manner that is suitable for allocable water quantification;
- To firm up on the approach and methodology, as well as modelling procedures, for decision support to the on-going licensing processes;
- To use system models, in the early part of the study, to support allocable water quantifications in the Study Area and, in the latter part of the study, to support on-going licensing decisions, as well as providing information for the development of the reconciliation strategy;
- Formulate reconciliation interventions, both structural and administrative/regulatory;
- Document the reconciliation process including decision processes required by the strategy; and
- Conduct stakeholder consultation in the development of the strategy.

1.3 STUDY AREA

The study area comprises of the water resources of the catchment of the Luvuvhu, Mutale, Letaba and Shingwedzi rivers linked to adjacent systems - as indicated by the inter-basin transfers on

Figure 1.1. This area represents the entire WMA 2 and includes tertiary catchments A91, A92, B81, B82, B83 and B90. Adjacent areas supplying water to this WMA or receiving water from this WMA are also part of the study area.

The Luvuvhu-Letaba WMA is located in the north-eastern corner of South Africa, where it borders on Zimbabwe in the north and Mozambique along the eastern side. It falls entirely within the Northern Province, and adjoins the Olifants and Limpopo WMAs to the south and west respectively. The Luvuhu-Letaba WMA forms part of the Limpopo River Basin, an international river shared by South Africa, Botswana, Zimbabwe and Mozambique.

Approximately 35% of the land area of the WMA along the eastern boundary falls within the Kruger National Park. The rivers flowing through the park are of particular importance to the maintenance of ecosystems.



Figure 1.1: Study Area

The confluence of the Luvuvhu and Limpopo Rivers forms the common point where South Africa borders on both Zimbabwe and Mozambique. The Shingwedzi River first flows into the Rio des Elephantes (Olifants River) in Mozambique, which then joins the Limpopo River.

The two main branches of the Letaba River, the Klein and Groot Letaba, have their confluence on the western boundary of the Kruger National Park. The Letaba River flows into the Olifants River just upstream of the border with Mozambique.

The topography is marked by the northern extremity of the Drakensberg range and the eastern Soutpansberg, which both extend to the western parts of the water management area, and the characteristic wide expanse of the Lowveld to the east of the escarpment. Climate over the water management area is generally sub-tropical, although mostly semiarid to arid. Rainfall usually occurs in summer and is strongly influenced by the topography.

Along the western escarpment rainfall can be well over 1 000 mm per year, while in the Lowveld region in the eastern parts of the water management area rainfall decreases to less than 300 mm per year and the potential evaporation is well in excess of the rainfall. Grassland and sparse bushveld shrubbery and trees cover most of the terrain, marked by isolated giant Boabab trees.

The geology is varied and complex and consists mainly of sedimentary rocks in the north, and metamorphic and igneous rocks in the south. High quality coal deposits are found near Tsikondeni and in the northern part of the Kruger National Park. The eastern limb of the mineral rich Bushveld Igneous Complex touches on the southern parts of the WMA. With the exception of sandy aquifers in the Limpopo River valley, the formation is of relatively low water bearing capacity. A wide spectrum of soils occurs in the WMA, with sandy soils being most common.

1.4 PURPOSE OF THIS REPORT

The purpose of this report is to document and to review the contents of water conservation and water demand management (WC/WDM) strategies developed by key Water Services Authorities (WSA). Based on the review, realistic estimates were made of the potential savings, cost implications and programme of implementation. This will form part of the development of possible future water demand projection scenarios.

The following specific WC/WDM task objectives to aid future planning in the Luvuvhu Letaba WMA were identified:

- Prepare a baseline of current water losses and potential savings in the Luvuvhu Letaba WMA;
- Complete WC/WDM performance score cards to identify strengths, weaknesses, opportunities and threats;
- Identify potential interventions, complete with budgets and time lines;
- Prepare water balance diagrams for the municipalities under investigation complete with system yields versus demand curves with and without WC/WDM; and
- Develop high level WC/WDM strategies and business plans for the municipalities within the Luvuvhu Letaba WMA.

The study area includes, or partly includes, the Water Services Authorities of Vhembe DM and Mopani DM as their associated local municipalities. Also included is Polokwane Local Municipality which receives water from this WMA. The study area is shown in **Figure 1.2**.

This task was undertaken as part of the DWA study titled *Development of a First Order Water Conservation and Water Demand Management Strategy and Business Plan for Various Municipalities under the DWA Rapid Response Programme - Limpopo Province.* By combining the results from the two studies, it was possible to cover all the municipalities within the two WSAs although these municipalities fall outside the official study area. Luvuvhu & Letaba Water Supply System



Figure 1.2: Location of District Municipalities

The municipalities investigated are shown in **Table 1.1** below.

Table 1.1: Summa	ry of district and I	ocal municipalities included
------------------	----------------------	------------------------------

Municipal Code	Municipality	Category	WSA
DC33	Mopani DM	C2	Yes
LIM331	Greater Giyani	B4	No
LIM332	Greater Letaba	B4	No
LIM333	Greater Tzaneen	B4	No
LIM334	Ba-Phalaborwa	В3	No
LIM335	Maruleng	B4	No
DC34	Vhembe DM	C2	Yes
LIM341	Musina	В3	No
LIM342	Mutale	B4	No
LIM343	Thulamela	B4	No
LIM344	Makhado	B4	No
DC35	Capricorn DM	C2	Yes
LIM354	Polokwane	B1	Yes

1.5 DEMOGRAPHICS

More than 80% of the population in the Luvuvhu Letaba WMA is rural based, with most living in informal and rural villages. The urban population is mostly found in towns such as Tzaneen, Nkowankowa, Giyani and Thohoyandou. The population figures as identified as part of the demographic component of this study are tabled in **Table 1.2**.

		-			
ID	District Municipality	Local Municipality	Major city/town	Population	Households
DC33	Mopani	Greater Giyani	Giyani, Hluphekani	275 809	62 343
		Greater Letaba	Kgapane, Modjaji'skloof	268 398	63 087
		Greater Tzaneen	Tzaneen, Nkowankowa	392 426	92 138
		Ba-Phalaborwa*	Phalaborwa, Namakgale	155 599	39 484
		Maruleng*	Hoedspruit	108 449	25 811
	Sub total			1 200 681	282 863
DC34	Vhembe	Musina*	Musina, Nancefield	51 892	12 525
		Mutale	Mutale-Masisi	94 639	21 468
		Thulamela	Thohoyandou, Makwarela	616 711	141 724
		Makhado	Tshakhuma, Makhado	416 054	94 635
	Sub total			1 179 296	270 352
LIM354	Capricorn	Polokwane*	Polokwane	631 318	153 980
	Total			3 011 295	707 195

 Table 1.2: Vhembe DM and Mopani DM Demographic Profile

Source: Population figures from the Department of Water Affairs, Reconciliation Strategy for the Luvuvhu and Letaba Water Supply System – 2012 and * Water Infrastructure Status & Intervention Plans.

Note: (*) Represent municipalities outside the reconciliation study area but form part of the Water Services Authority.

Polokwane is the largest town in the study area with Mutale municipality having no major city as core. Thulamela municipality has the largest population of which most are rural.

2 STUDY METHODOLOGY

This project was undertaken in four main tasks, the details of which are discussed in the following sections.

2.1 TASK 1: COLLECT AND COLLATE PREVIOUS STUDIES

The WC/WDM component of the study combined the collection of both qualitative and quantitative data. NRW water balance data was obtained and consolidated from a variety of sources, including WSDP's, IDP's, Blue Drop – Green Drop Assessments, the MuSSA, as well as reports and data submitted by the municipalities. Preliminary WC/WDM status quo assessments were conducted with Polokwane Municipality as well as the Vhembe and Mopani Districts respectively, as the Water Services Authorities falling within the Levhuvhu Letaba WMA. Each of the local municipalities falling within the DMs and Polokwane were approached directly in order to obtain the required information.

The water authorities were requested to complete water balances and scorecards. The objective of the forms was to determine the status quo and if there is scope for water loss reduction in the supply systems. Both the water balance and scorecard have been developed by the project team for the Water Research Commission, and provide a high level assessment of the potential of WC/WDM in the area.

2.2 TASK 2: MUNICIPAL WORKSHOPS

The assessments under Task 1 were undertaken to gain a complete understanding of the existing water supply networks, their operation and key problems. This includes a brief review of the existing condition of the infrastructure, the operation of the system, levels of cost recovery and management practices.

The SABS 0306:1999 Code of practice for the Management of potable water in distribution zones provides guidelines on the management, administration and operational functions required by water services authorities in order to account for potable water within their distribution systems and to apply corrective actions to reduce and control water. The assessments conducted have been evaluated in terms of these guidelines to assess the scope for water loss reduction in the WMA.

Having reviewed the various existing information sources for each demand centre, meetings were arranged with the WSAs to discuss the WC/WDM strategy development methodology, as well as to discuss the findings extracted from the existing data sources. The main objective of these meetings was to establish:

- Status quo on the implementation of the WC/WDM strategy;
- Discussion of water balance and scorecard;
- Results from the various interventions;
- Problems and possible solutions for implementing a WC/WDM project; and
- Prioritising of key projects and development of a realistic implementation programme.

The quantitative base data collected included demographic data, tariff information as well as

figures pertaining to the number of industries and public institutions present in the LMs. The modified IWA Water Balance for South Africa was utilised to capture and calculate the water balances for the LMs as shown in **Figure 2.1**. The municipalities were requested to complete a quantitative score card which allowed the municipality to assess the areas of WC/WDM requiring a more concerted effort. In addition to the quantitative data component, a comprehensive qualitative questionnaire was developed for discussion purposes with the municipalities. The questionnaire was aimed at gathering detailed information from the municipalities under investigation pertaining to the adequacy of institutional aspects of the organisation to support demand management, the availability of materials, vehicles and other support structures to aid in the implementation of WC/WDM. It also assessed the efficacy of the metering and billing systems, levels of political support, customer relations and support services, asset management as well as the nature, level and frequency of the technical interventions undertaken to ensure proper management of the water systems and NRW reduction. This questionnaire formed the bulk of the status quo assessment visits, and the open ended nature of the questions allowed the respondents to provide comprehensive information related to the perceived functioning of the municipalities.

		Billed	Billed Metered Consumption	Free basic	
System Input Volume	Authorised Consumption	Authorised Consumption	Billed Unmetered Consumption	Revenue Water	
		Unbilled	Unbilled Metered Consumption		
		Consumption	Unbilled Unmetered Consumption		
	Water Losses	Apparent	Unauthorised Consumption	Non	
		Losses	Customer Meter Inaccuracies	Revenue	
		Water Losses Real Losses	Leakage on Transmission and Distribution Mains	Water	
			Leakage and Overflows at Storage Tanks		
			Leakage on Service Connections up to point of Customer Meter		

Figure 2.1: Modified IWA Water Balance

Through the discussion, the project team attempted to identify the "quick fix" projects whereby major savings can be achieved for limited capital investment.

2.3 TASK 3: STRATEGY AND BUSINESS PLAN DEVELOPMENT

Based on the results from Tasks 1 and 2, strategy and business plans were developed for each municipality. This strategy focuses on the following aspects:

- Reduction of water losses;
- More efficient use of existing water supplies;
- Deferred construction of new facilities;
- Increased revenues; and

• Decreased expenditure on purchasing or producing water, due to lower volumes of water required, reduced power costs, reduced chemical costs, etc.

The results from this task are included in a realistic WC/WDM strategy and business plan which assess the potential savings, the cost implications and programme for implementation. The strategy was forwarded to the respective WSAs for approval and implementation in each of the demand centres (refer to **Appendix A** for the full strategy documents).

2.4 TASK 4: REVIEW STRATEGIES AND BUSINESS PLANS

It is imperative that the targets set in the strategy are realistic and the goals are met as it has a direct implication on future augmentation schemes. The WC/WDM strategies will be reviewed after 18 months to assess whether the targets have been met.

Should it be found that the targets are unrealistic; the WC/WDM will be changed accordingly.

3 STATUS QUO ASSESSMENT

The Vhembe and Mopani District municipalities as well as Polokwane were the first institutions to be assessed as the Water Services Authorities within the study area. Although these municipalities were initially assessed under the Rapid Response Programme, the issues discussed with the municipalities during the interviews remained relevant for the Luvuvhu-Letaba assessment.

3.1 HISTORICAL WATER REQUIREMENTS

Historical water consumption figures were obtained from the WSDP and previous reports. There are huge discrepancies between the various sources of information as shown in **Figures 3.2 and 3.3**.

	Population		System Input Volume	l/c/d	
Municipality	Source	Adopted	Source	Adopted	Adopted
Greater Giyani	LLRS	275 809	WISIP	18.85	187
Greater Letaba	LLRS	268 398	Lepelle	13.3	147
Greater Tzaneen	LLRS	392 426	Blue Drop/All Town	14.55	102
Ba-Phalaborwa*	WISIP	155 599	WISIP	23.66	417
Maruleng *	WISIP	108 449	All Town	4.40	112
Mopani DM Total		1 200 681		74.80	164

Table 3.1: Mopani DM Water Requirements

Source: Department of Water Affairs, Water Infrastructure Status & Intervention Plans (2012), All Town Study, Lepelle Northern Water Annual Report 2011, Luvhuvhu Letaba Reconciliation Strategy 2012, Blue Drop Report (2012)

 Table 3.2: Vhembe DM Water Requirements

	Population		System Input Volume (Million m ³)		l/c/d
Municipality	Source	Adopted	Source	Adopted	Adopted
Musina*	WISIP	51 892	Musina LM	4.96	262
Mutale	LLRS	94 639	Mutale LM	9.63	279
Thulamela	LLRS	616 711	WISIP	41.07	187
Makhado	LLRS	416 054	LLRS	19.60	129
Mopani DM Total		1 179 296		75.25	140

Source: Department of Water Affairs, Water Infrastructure Status & Intervention Plans – 2012

There are major discrepancies between the various information sources as depicted in **Table 3.1** and **Table 3.2** and engineering judgement combined with knowledge of the area was used to assess the current consumption. The estimated water consumption is further complicated by the intermittent supply problems experienced in the area.

The average consumption in Mopani DM is well in line with the national average of 236t/c/d, but the results indicate that the supply is inequitable with scope for reduction in the urban areas. The average supply in Vhembe is considerably lower but also inequitable. The average consumption is also in line with the generally low level of service experienced in the area.

3.2 WATER BALANCE AND KPI

The existing information from the Ministerial NRW assessments and other sources were utilised and modified to include all the requirements of the Water Services Audit. The database was populated with the basic information required to run the IWA water balance model.

Where there was limited information available as shown in **Figure 3.1** and **Figure 3.2** below, estimates were calculated in order to complete the water audit for all nine municipalities within the WSAs that makes up Luvuvhu Letaba Water Management Area.



Figure 3.1: Mopani DM IWA Water Balance (million m³/a)

Luvuvhu & Letaba Water Supply System

	Authorised consumption = 28.382	Billed authorised = 27.768	Billed metered = 27.768	Revenue water = 27.768
System Input Volume = 75.250	Water losses = 46.868	Apparent losses = 7.968 Real Losses = 38.901	Apparent losses = 7.968 Real Losses = 38.901	Non-revenue water = 47.482

Figure 3.2: Vhembe DM Historical Data (million m³/a)

Based on the results from **Figure 3.1** and **Figure 3.2**, it is apparent that non-revenue water challenges facing Vhembe and Mopani DM are similar in many respects to problems experienced by numerous other municipalities throughout South Africa. Payment for services is very low in the study area and the consumers that are able to pay for services can maintain their domestic water supply systems. In the rural and low-income areas, however, many consumers who cannot afford to pay for their water rely mostly on the free basic water allowances.

The standard IWA Non-Revenue Water Balance template was utilised to capture and calculate the water balances for each of the District Municipalities (WSAs). The results and key performance indicators are summarised in **Table 3.3** below.

Indicator	Vhembe DM	Mopani DM	Polokwane LM
Annual input volume (million m ³ /a)	75.25	74.80	34.6
Daily input volume (Mł/d)	206	204	95
Population	1 179 296	1 200 681	631 318
Number of households	270 352	282 863	153 980
% Non-revenue water	<55%	<65%	45%
ℓ / capita / day	140	164	150
m ³ / household / month	19	21	19

Table 3.3: KPI's

Table 3.3 indicates that the average water consumption is within the acceptable range but nonrevenue water is very high and it is expected that the demand is currently curbed by the poor supply in some areas. The results are based on estimates and the municipalities urgently need to address the poor management information. In order to address water challenges in the study area, many WC/WDM interventions can be considered. Each municipality within the WMA has its own unique problems to some extent although the main underlying issues are often similar. Before deciding on how to address the problems, it is first necessary to understand them. To this end, an overview of all possible WC/WDM interventions is essential so that potential measures may be assessed. A full WC/WDM strategy would normally include a wide range of interventions tailored to the specific problems identified in each area. The interventions would then be prioritised in such a manner that the maximum savings can be achieved for the minimum expense and the implementation would be scheduled accordingly. The challenges and interventions are discussed below.

3.3 INSTITUTIONAL REVIEW

Based on the discussions, it became apparent that the WSAs were plagued by a magnitude of logistical and institutional factors which contribute to the varying state of water service delivery in the area. All the WSAs and WSPs are characterised by high vacancy rates, especially in their water services departments. There are also no clear service level agreements between the WSAs and WSPs and WSPs and roles and responsibilities are not clearly defined.

Both the Vhembe and Mopani DM's are characterised by insufficient human capacity and skills to undertake all the technical work. Vhembe DM noted a particularly limited skills base in the WSA at both the management and operations and maintenance level. A primary matter of concern for the Mopani DM is the ageing skills base and the difficulty in training older staff. Mopani DM, however, has indicated that although the DM lacks the staff required for the work, the available human resources are correctly skilled.

Due to the budgetary and capacity constraints, no training on WC/WDM is taking place in any of the WSAs. Some training, however, has been provided in the Mopani DM for the process controllers. In recent years, the DWA has placed significant emphasis on improving the water quality in municipalities and funding has been provided for the proper training of municipal waste water treatment personnel. It is clear that the same level of commitment and drive is required to enforce and improve WC/WDM practices in municipalities.

Amongst the challenges common across the WSAs in the Limpopo region, is the availability of support structures to undertake the necessary system operations and maintenance work. Vhembe District attributed their challenge to lack of funding for the deficiencies, whilst Mopani DM pointed out that the primary challenge lies not with funding but rather inefficient expenditure of the available budget. Further contributing factors are the procurement processes which were mentioned to be slow and unresponsive. The problem of inadequate procurement processes was noted to be particularly prominent in Polokwane Municipality. Supply chain management however appears to be a pervasive challenge which must be addressed in order to improve the general state of infrastructure asset management.

At the WSA level, the relationship between the technical departments and the other departments (with specific reference to the department of finance) is positive with a reasonable flow of information between departments. Polokwane Municipality reported a very positive relationship between the departments and a working environment conducive to easy access to information. This, however, appears to not be the case at the WSP level.

All of the WSAs acknowledge the existence of political support for a variety of water related issues. They also stress, however, that training is urgently needed to improve the understanding of the water business and the municipal reforms that are required to improve cost recovery. All the WSAs are currently undergoing a bylaw review process. The Vhembe DM is developing water services bylaws which will be applied across all WSPs. It must be noted, however, that some of the WSPs have existing bylaws which were previously developed specific to the LMs which are being adopted. Further clarity is still required on how the new bylaws will be applied and whether stipulations will exist in terms of the blanket application of the bylaws at the WSP level. The WSAs have WSDP's in place which are updated on a continuous basis, but the accuracy of the data is very questionable and there is a serious lack of management information.

3.4 FINANCIAL REVIEW

The municipalities within the region are faced with significant infrastructure maintenance backlogs which have not been addressed due to budget limitations which, to a large extent, are caused by poor cost recovery. The same challenges face the WSAs under investigation with the exception of Polokwane which has reported improved levels of cost recovery due to concerted efforts to enforce the credit control policy. The primary source of funding for Vhembe and Mopani is grant funding, with Vhembe DM stating unequivocally that without the external grant funding, the municipal service would come to a standstill. This places the WSAs in positions of significant vulnerability.

A further critical matter in this regard is the tariff reforms which are required to promote WC/WDM. Whilst all WSAs have rising block tariffs in place, the existing tariffs do not account fully for the cost of water services. One of the challenges facing the WSAs is the high indigent and rural populations, which compounds the difficulties faced in both the cost recovery and tariff setting due to the limited urban regions which can be metered and billed for consumption versus the affordability for the consumers. It was noted, however, that a starting point for the municipalities would be to ensure that all the commercial properties and industries are metered and billed fully for consumption and monitored on a continuous basis, to ensure that the consumers that can pay, do pay for services. Proper arrangements are also required for new low cost housing developments with services installed, which should also be billed for consumption. These areas, when not managed closely, lead to significant water losses owing to poor quality fittings and general misuse of water resources. In addition, the tariff setting process should ideally include both the finance and technical departments to ensure that all aspects of water services are taken into account - with the aim to continuously improve the cost reflectiveness of the tariffs, and to support the future sustainability of the WSAs.

The state of billing and metering within the WSAs is a matter of great contention. The metering and billing task is undertaken by the WSPs, however, the administration of funds and the lines of communication and access to information in this regard are reflective of the poor overall relationship between the WSAs and the WSPs. The matter is further complicated by the fact that within the WSPs themselves, it is common for a lack of communication between the technical and finance departments; notwithstanding the reporting that must be completed for the WSAs. Vhembe DM has, however, undertaken cost recovery programmes implemented by an external service provider within the LMs; which aids in improving the accuracy of meter reading and billing, as well as the access to billing information. An observation was that the service providers report to

the WSA, but do not share the information collected with the WSP. This has resulted, in certain cases, with the service providers having more detailed information on the operations of the municipality than the municipal personnel, which does not bode well for skills development and the improvement of management information at the WSP level. In Polokwane Municipality, however, the simpler structure allows greater of access to information. The collection and collation of management information is, however, largely lacking.

3.5 SOCIAL REVIEW

Numerous studies conducted over the years have identified the need for proper public engagement and participation in improving service delivery in municipalities. It is unfortunate that the relationship between the WSA and the consumers within the Luvuvhu-Letaba WMA is strained due to general dissatisfaction with the state of water services. The WSAs openly acknowledge that, due to the prevailing shortages in water resources in the area; which should have to a large extent been rectified by the commissioning of the Nandoni Dam, parts of the region are on intermittent supply. This unhappiness with the quality of service has generated negative perceptions of the WSAs amongst consumers which, to some extent, has also contributed to the prevailing poor cost recovery. It must however be noted that at the WSP level, positive relationships do exist, with specific reference to municipalities such as Tzaneen and Musina Local Municipalities .as well as Polokwane, where cost recovery and services have improved or have been maintained at an acceptable standard. Despite the multitude of challenges faced by the WSAs, no consumer engagement programmes are in place. Community awareness and education is habitually undertaken on an ad-hoc basis in cases of droughts or floods. This results in a consumer base that is ill-informed regarding water related issues and thus not cognisant of water conservation practices which would assist the WSAs in improving services in this region. Polokwane municipality has, however, made strides to implement community awareness. The programmes are not continuous, which has resulted in a consumer base which has not adequately internalised water conservation practices to alter behaviour. Likewise, the schools in the WMA are not regularly engaged on water matters and, as a significant identified avenue of water losses and thus of potential savings, a continuous education programme should ideally be implemented within this prime sector.

Currently, the WSAs have no structures in place to support consumers, with the exception of Polokwane Municipality which has a 24-hour customer care centre in place. There are no customer care centres available in the WSAs or WSPs to report leakage or submit water related queries. Such structures would be highly beneficial for the municipalities, particularly to aid passive leak detection and water loss monitoring through the communities. To address the magnitude of the challenges faced by the WSAs, the participation of both institutions and consumers or communities is crucial. Cost recovery and metering issues will not easily be addressed in the short-term. Consumer cooperation and support is therefore pertinent in this WMA.

3.6 TECHNICAL REVIEW

As mentioned previously, one of the primary challenges in the region is the availability and quality of basic water management information. The Mopani District has few bulk meters in place at which system input volumes can be measured, with the exception of the more well established WSPs, specifically Tzaneen Municipality. Likewise, the Vhembe District and Polokwane Municipality are faced with the same short comings. One of the reasons for the limitations in management information is the rural nature of most of the local municipalities, where a substantial component of the population utilises boreholes as the main source of water. The Vhembe District did, however, indicate that the water quality in a number of the main boreholes is monitored, as well as the yield thereof. It was also noted during the interview process that once the responsibility transfer process between the WSAs and WSPs has been concluded, bulk meters will be installed in the various local municipalities to improve the availability of the management information.

The installation of bulk meters is also planned for Polokwane Municipality in the near future. In line with the limitations in macro management information, the micro management structures in the form of sectorisation and zone metering are also largely absent, with the exception of Greater Tzaneen, Ba-Phalaborwa and Greater Letaba municipalities in the Mopani District. Basic, proactive infrastructure asset maintenance is also lacking in all the WSAs. There are significant infrastructure replacement backlogs in all instances, with no replacement programme in place to improve the situation. The water supply networks in the region are primarily asbestos cement, with significant pipe bursts in certain areas, particularly in the Mopani District, due to the age of the infrastructure. The water in the region is generally supplied at very low pressures, mainly because of the water shortages in the area, with very few instances of reservoir overflows also attributed to the limitations in the amount of the water resources available. There is thus limited scope existing for the implementation of pressure management in the region at this stage, with very few selected areas that would benefit from such interventions, such as Giyani and Tzaneen in Mopani District as mentioned by the WSA.

Numerous studies have noted the contribution of internal plumbing leakage as a significant component of water losses. The Vhembe District noted leakage on private properties as a significant problem in the WSA, which is not being addressed through the existing or current programmes. The Mopani District, contrarily, does not perceive experiencing a similar challenge however, this is not certain as no audits have been conducted in the WSA to establish the extent or occurrence of this problem. Whilst the general trend is that municipalities do not operate or repair leakage on private properties, huge benefit can be derived from undertaking such interventions; particularly in municipalities where cost recovery and payment for services is very poor as is the case with the aforementioned WSAs.

It is encouraging that despite the absence of an infrastructure replacement programme, some meter replacement programmes have taken place in the Vhembe District and the top consumers are monitored on a monthly basis. It is clear, however, from the discussions that despite the minimal population from which the costs of water services can be recovered, this is not undertaken to the fullest extent by both WSAs. Vhembe District indicates that approximately 60% of the non-domestic consumers in the WSA are billed and metered and 70% of the domestic consumers are metered and billed - which is surprising as the metering of the domestic consumers exceeds that of the non-domestic consumers from which a substantial portion of the costs can legitimately be

recovered. It is thus crucial that the non-domestic sector be investigated and audited in all WSAs to ensure that all industries and businesses are properly metered and billed to generate income for the municipalities.

A further significant challenge faced by the WSAs is that of illegal connections which have been noted to be widely prevalent in the rural segments of the region. This is mainly due to the community's dissatisfaction with the level of service provided in these areas. The high prevalence of illegal connections suggests that the apparent losses in these WSAs is significantly higher than the assumed estimates which are applied to water balance calculations in instances where the management information is lacking. As it has already been identified as a significant water loss contributor in this region, this component of the water losses warrants more detailed investigation.

The WSAs under investigation made mention of existing asset registers which include the bulk water infrastructure present. The asset registers, however, were noted to be primarily of a financial nature with limited detail on the life span and replacement details of the infrastructure. Mopani Districted noted the asset register for the WSA is currently under review in order to rectify, or compensate for, the existing limitations, whilst the outstanding infrastructure, which belonged to the Department of Water Affairs, will be captured in the asset register for Vhembe once the transfer of responsibilities between the WSAs and the WSPs have been completed.

Having expounded on the status quo of the WSAs in the region, it must be noted that the challenges at the local municipality level are largely similar across the board. The most outstanding trends observed throughout the local municipalities, or WSPs, are the glaring lack of management information (through deficient monitoring, recording and reporting and measurement structures). Furthermore, the dissension between the WSPs and the responsible WSAs causes substantial barriers in the access to management information, as well as to how this information is communicated, coordinated and understood. Generally, proactive asset management and maintenance appears largely absent which has significantly compromised the quality of water service provision in the WMA, with the bulk infrastructure in substantial disrepair. As mentioned previously, there is limited bulk and zone metering which allows for very limited macro and micro management of the water resources.

3.7 REGULATORY PERFORMANCE MEASUREMENT SYSTEM

The Department of Water Affairs measures and monitors the overall performance of water services authorities through the Regulatory Performance Measurement System (RPMS). The RPMS is a tool to assist the DWA consistently, transparently, and objectively measure performance in the sector.

KPIs 7 to 11 have a direct impact on WC/WDM and therefore analysed as part of this study. KPI 8 – Institutional Effectiveness and KPI 9 – Financial Performance are critical to implement effective WC/WDM and must be addressed as a matter of priority. KPI 11 highlights the lack of information with regards to management information. The results from the 2011/12 RPMS are summarised in **Table 3.4** and **Table 3.5**.

Table 3.4 Mopani DM RPMS Results

Key Performance Indicators	Achieved KPI Score	Required score	Performance assessment
KPI 1: Access to water supply	3.165	3	Adequate
KPI 2: Access to sanitation	3.125	3	Adequate
KPI 3: Access to Free Basic Water	2.689	3	Concern
KPI 4: Access to Free Basic Sanitation	0	3	Crisis
KPI 5: Drinking Water Quality management	0	3	Crisis
KPI 6: Wastewater quality management	2	3	Concern
KPI 7: Customer service quality	1.75	3	Concern
KPI 8: Institutional effectiveness	3.343	3.5	Concern
KPI 9: Financial performance	2.929	4	Concern
KPI 10: Strategic asset management	4.534	3	Excellent
KPI 11: Water use efficiency	No data	3	No data

Table 3.5 Vhembe DM RPMS Results

Key Performance Indicators	Achieved KPI Score	Required score	Performance assessment
KPI 1: Access to water supply	1.87	3	Concern
KPI 2: Access to sanitation	3.113	3	Adequate
KPI 3: Access to Free Basic Water	5	3	Excellent
KPI 4: Access to Free Basic Sanitation	0	3	Crisis
KPI 5: Drinking Water Quality management	1	3	Crisis
KPI 6: Wastewater quality management	0	3	Crisis
KPI 7: Customer service quality	3.5	3	Good
KPI 8: Institutional effectiveness	3.276	3.5	Concern
KPI 9: Financial performance	0.571	4	Crisis
KPI 10: Strategic asset management	3.375	3	Good
KPI 11: Water use efficiency	0	3	Crisis

The results from the RPMS confirms the problems the municipality is facing in terms of institutional, customer care, finances, asset management and water loss management.

3.8 BLUE DROP ASSESSMENTS

Ensuring efficient and continuous supply to an area is a prerequisite for implementing effective WC/WDM. WC/WDM cannot be promoted and implemented in areas characterised by intermittent supply and poor level of service.

The Blue Drop assessment process is an effort by the Department to raise the drinking water quality and reliability of supply to all consumers. The incentive-based regulatory approach acts as a positive stimulus to facilitate improved performance and public accountability, whilst establishing essential systems and processes to sustain and measure gradual improvement. The results from

the Blue Drop assessment is an indication of the efficiency and sustainable supply to an area which impacts directly on WC/WDM.

The regulatory impression of Mopani DM is quoted as follows "The DWA Inspectors identified lack of municipal management support as a reason of concern which could delay future improvements in the drinking water quality management performance of the Mopani District Municipality. While the municipality provided information that allowed a better assessment of performance in most of the supply systems managed solely by Mopani, a number of systems were still found notassessed. Water to residents in the Nondweni, Nkambako, Thapane Semarela, Giyani, Mapuve and Middle Letaba water supply areas were found of a microbiological quality not compliant with the requirements of SANS 241 (South African National Standard for Drinking Water). The performance of Mopani was measured at higher scores in systems where the WSA received assistance from Tzaneen Local Municipality and Northern Lepelle Water".

The regulatory impression of Vhembe DM is quoted as follows "The 2012 Blue Drop scores for Vhembe District Municipality indicates the significant achievement of improvement in performance for every water supply system within the water services authority's area of jurisdiction. This momentous accomplishment warrants celebration of the dedication of those responsible for drinking water quality operations and management within this municipality".

3.9 WCWDM QUANTITATIVE SCORECARD

The WC/WDM quantitative scorecard provides an indication of the WC/WDM activities the municipalities are undertaking against international best practice. The purpose of the scorecard is for municipalities to evaluate themselves on an annual basis and attempt to improve their score.

The results for Mopani and Vhembe are shown in Figure 3.3 and Figure 3.4 respectively.



Figure 3.3 Mopani Quantitative Scorecard



Figure 3.4 Vhembe Quantitative Scorecard

The results from the quantitative scorecard confirms that WC/WDM is not sufficiently addressed by the municipalities and performing these basic tasks will make a significant improvement.

3.10 FINANCIAL STATEMENT ASSESSMENT

Key results from the 2011/12 financial statement for Mopani DM and Vhembe DM are summarised in **Table 3.6** and **Table 3.7** respectively.

The results from both municipalities indicate the huge challenges faced by the municipalities with regards to cost recovery which will enable asset management, filling of vacancies and water loss management.

Revenue / Expenditure	2011 / 2012	2010 / 2011
Income from water sales	R 136 210 424	R 123 104 771
Bulk water purchases	R 96 758 375	R 72 545 334
Estimated volume water sold	35 483 518	
Estimated average R/kl sold	R 3.84	
Debtors	2011 / 2012	2010 / 2011
Current (0 -30 days)	R 12 954 594	R 3 062 512
31 - 60 days	R 13 019 031	R 2 081 367
61 - 90 days	R 8 233 129	R 1 864 156
91 - 120 days	R 6 246 847	R 112 887 977
121 - 365 days	R 53 969 176	R 126 233 537
> 365 days	R 141 388 960	-
Total	R 235 811 737	R 246 129 549
Financial performance of water segment	2011 / 2012	2010 / 2011
Actual Income	R 0	R 0
Actual Expenditure	R 420 294 677	R 232 857 818
Surplus / (Deficit)	(420 294 677)	(232 857 818)
Asset value (excluding depreciation)	2011 / 2012	2010 / 2011
Water reservoirs & reticulation	R 1 853 915 127	R 1 742 182 523

Table 3.6: Mopani DM Summary of Financial Statement

The status of water supply services is described as follows in the financial statements:

"Water still remains a challenge within the district given the ageing infrastructure, huge number of illegal connections and new unplanned residential sites particularly in the rural communities".

"The position of Director Water Services was filled in July 2012 while the position of Director Corporate Services became vacant as from August 2012. The total approved posts is 1 564 which includes the staff transferred from the Department of Water Affairs. Only 886 posts have been filled with 730 vacant which also include retirements within the water directorate and the municipality is currently working around the clock to fill all the budgeted positions".

Table 3.7: Vhembe DM Summa	ry of Financial Statement
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Revenue / Expenditure	2011 / 2012	2010 / 2011
Musina	21 445 350	23 493 508
Thulamela	26 513 595	25 517 503
Makhado	21 051 139	18 454 400
Mutale	3 421 362	3 072 646
Total water sales	72 431 446	70 538 059
Debtors	2011 / 2012	2010 / 2011
Thulamela	73 332 292	74 586 847
Makhado	23 643 590	26 353 635
Musina	63 835 491	66 023 362
Mutale	12 462 989	6 854 255

Total	173 274 362	173 818 099
Current (0 -30 days)	5 454 836	5 551 529
31 - 60 days	6 072 253	4 181 856
61 - 90 days	6 105 046	4 183 574
91 - 120 days	4 410 817	4 036 280
121 - 365 days	150 620 397	158 420 695
Provision	(109 296 663)	(130 410 379)
Total	63 366 686	45 963 555
Financial performance of water segment	2011 / 2012	2010 / 2011
Actual Income	932 036 790	794 322 640
Actual Expenditure	644 249 378	734 966 101
Surplus / (Deficit)	287 787 412	59 356 539
Asset value (excluding depreciation)	2011 / 2012	2010 / 2011
Water reservoirs & reticulation	1 354 284 328	1 700 826 990

The status of water supply services is described as follows in the financial statements:

"Service charges relating to water are based on consumption. Meters are read on a quarterly basis and are recognised as revenue when invoiced. Provisional estimates of consumption are made monthly when meter readings have not been performed. The provisional estimates of consumption are recognised as revenue when invoiced. Adjustments to provisional estimates of consumption are made in the invoicing period in which meters have been read. These adjustments are recognised as revenue in the invoicing period. Revenue from the sale of water prepaid meter cards is recognised at the point of sale".

"During the current financial year the municipality incurred average distribution losses of 18071278 m^3 due to the water leakages".

4 STRATEGIES

4.1 INSTITUTIONAL STRATEGY

From an institutional standpoint, the key intervention in the WSAs within the Luvuvhu-Letaba WMA will be to address the considerable vacancies or shortages in human resources and skills. Ideally, dedicated individuals or sections should be established in order to drive Water Conservation and Demand Management. Specialised training in WC/WDM is pertinent to support the municipal personnel in undertaking the required water loss reduction activities, particularly at the management level where guidance and leadership is required to drive demand management. It is also crucial that the lines of communication are opened between the different municipal departments in order to aid more efficient access to information which will allow for more effective and coordinated planning. In this regard, an NRW steering committee comprising of the relevant councillors, finance representatives, communication and the technical department may be established to facilitate improved reporting and management of NRW. Procurement processes during and after the transition period must also be streamlined in order to enable swifter access to support structures required for operations and maintenance tasks, which are necessary to mitigate water losses in the systems. Political support cannot be divorced from any of the abovementioned strategic matters, as it is essential for the acceptance, adoption and implementation of all the key NRW reduction initiatives.

4.2 SOCIAL STRATEGY

One of the key findings of the assessments undertaken was the pervasive poor relationships existing between the WSAs and the consumers. The assessment also revealed that very little was being done to engage the consumers on water issues and to gain their cooperation whilst the WSAs tackle the pertinent water challenges within the WMA. As mentioned previously, the consumer behaviour and adaptation to increasing water scarcity is crucial, not only in water loss reduction initiatives, but also the mitigation of further scarcity in the WMA. Extensive and continuous consumer water education programmes are required which will focus on the community and other key water users, including agricultural users and institutions such as schools which are potent avenues for the reduction of water losses. The installation of water efficient devices, as well as rain water harvesting; are also avenues which can further be explored for promotion and implementation in different sectors. These water efficient devices may also aid water loss reduction at the consumer level, particularly in areas where metering and billing cannot immediately be effected, and where cost recovery is very low due to high indigent populations. Structures should be put in place to support consumers in reporting leakage and other service related complaints. This information should be captured electronically in order to allow proper tracking and analysis of water loss contributors and significant problem areas. The political leadership should lead these interventions and provide substantial support in order to improve the sustainability of the community based interventions.

4.3 FINANCIAL STRATEGY

It is widely accepted that one of the key reforms required in the municipal sector is financial reform. Such reform includes the overhaul of metering and billing systems to improve the state of internal revenue, as well as tariff setting process and outcomes that not only promote water loss and demand reduction in line with the presidential targets; but also take into account the cost of water services. One of the findings of the financial review conducted, particularly in the Vhembe DM, was the lack of a proper methodology in the tariff setting process. In the absence of the application of guidelines to the process, the tariffs do not promote demand management or reflect the cost of water services. This ideal is not easy to achieve in light of the indigent levels in the municipalities under investigation. Where practicable, however, metering and billing must be effected, particularly in the non-domestic sector. As a first step, meter audits should be undertaken in this consumer sector in order to identify unmetered connections and non-functional meters which could, in the short term, significantly improve cost recovery. Furthermore, it is imperative that the tariff setting process includes inputs from the technical departments which could assist in making the tariffs increasingly effective in achieving the water use efficiency objectives.

National Treasury has been very vocal on the dependency of municipalities on grant funding and has emphatically expressed the need for municipalities to actively demonstrate a commitment to proper budgeting, planning and cost recovery, with a focus on demand side management as a first step in managing and more effectively utilising the available resources. The aforementioned require closer monitoring of consumers, particularly the top consumers, an effective system to capture and refer billing related complaints and progressive payment of services in the municipalities, which must be supported and preceded by proper community awareness and education, and wide spread public engagement.

4.4 TECHNICAL STRATEGY

The assessment conducted revealed two primary issues of water scarcity in the WMA. The first is the challenge of the water resource itself which must be rectified through additional resources. The second, however, relates to scarcity from the perspective of access to water resources which must be addressed at the WSA level. One of the primary challenges, as mentioned previously, is the availability of management information which must be rectified as a matter of priority. Measurement of the system input volumes as a first step is required to evaluate the extent of water losses in the WMA, particularly in the Mopani District, Vhembe District and Polokwane municipalities. Sectorisation and zone metering and monitoring is also required in the majority of the municipalities in the WMA to aid in the micro management of the system once bulk metering has taken place. It is an observed trend that in municipalities where management information structures are in place, the data obtained from the devices is not utilised. The data is neither captured or analysed in any meaningful way which would aid in generating the required management reports with the NRW KPI's included. The installation of meters is thus only the first step and will be altogether useless if the information is not captured and monitored on a monthly basis.

Proper budgets must also be set aside for proactive infrastructure asset maintenance. There is a substantial maintenance backlog in the municipalities in the WMA, with a significant number of access challenges being caused merely by the age of the existing infrastructure. Simply replacing the network will, however, not resolve all the challenges which will require greater community participation and cooperation to achieve. Passive leak detection through community reporting will greatly enhance the ability of the WSPs to monitor the network and explore potential for pressure
management in selected areas experiencing high pipe burst frequencies. The location of infrastructure also needs to be clarified in order to identify aspects of the network which are in a state that compromises the ability to provide services to the consumers. In this regard, there is a need to develop digital as-built drawings of the network which must be accompanied by the development of a comprehensive asset register. This register must incorporate critical information such as the age of the infrastructure, replacement period and cost, as well as the location of the assets. Through such interventions, substantial community based employment can be created, where indigent residents may be appointed and utilised to clean and locate the infrastructure.

5 WC/WDM PROJECTIONS

5.1 WATER SUPPLY AND DEMAND BALANCE DIAGRAM FOR VHEMBE DM

The potential impact of WCWDM on the future water requirements of Vhembe DM and its target water balance are shown in **Figure 5.1** and **Figure 5.2**.



Figure 5.1: Vhembe DM Projections

From the graph it can be seen that overall Vhembe DM will probably not experience any deficit in the next five years but the supply is unequal and some areas already experiences deficits. Water demand management interventions must therefore be implemented as a matter of priority.

System Input Volume =	Authorised consumption = 36.836	Billed authorised = 36.098	Billed metered = 36.098	Revenue water = 36.098
73.745	Water losses = 36.909	Apparent losses = 6.275 Real Losses = 30.635 Reduced Input Volume =	Apparent losses = 6.275 Real Losses = 30.635	Non-revenue water = 37.647

Figure 5.2: Vhembe DM Target Water Balance Diagram (million m³/a)

5.2 WATER SUPPLY AND DEMAND BALANCE DIAGRAM FOR MOPANI DM

The potential impact of WCWDM on the future water requirements of Mopani DM and its target water balance are shown in **Figure 5.3** and **Figure 5.4**.



Figure 5.3: Mopani DM Projections

From the graph it can therefore be seen that Mopani DM will most experience water deficits in the near future and WC/WDM must be implemented.

System Input Volume =	Authorised consumption = 45.181	Billed authorised = 44.354	Billed metered = 44.354	Revenue water = 44.354
	Water losses = 37.470	Apparent losses = 6.370 Real Losses = 31.100 Reduced Input Volume = 1.687	Apparent losses = 6.370 Real Losses = 31.100	Non-revenue water = 38.297

Figure 5.4: Mopani DM target water balance diagram (million m³/a)

6 BUDGETS REQUIREMENTS

The budget requirements for the next five years are summarised in Table 6.1, Table 6.2and Table 6.3 The budget estimates address social, institutional, legal, financial and technical aspects of a WCWDM strategy. It also allows for capital, operation and maintenance budgets as most WC/WDM interventions fail after a few years when they are not maintained.

	Туре	Year 1	Year 2	Year 3	Year 4	Year 5	Total
TOTAL COSTS							
Institutional	CAPEX	R 1 000 000	R 500 000	R 500 000	R 0	R 0	R 2 000 000
	OPEX	R 575 000	R 2 875 000				
	TOTAL	R 1 575 000	R 1 075 000	R 1 075 000	R 575 000	R 575 000	R 4 875 000
Financial	CAPEX	R 200 000	R 100 000	R 100 000	R 0	R 0	R 400 000
	OPEX	R 43 780 000	R 218 900 000				
	TOTAL	R 43 980 000	R 43 880 000	R 43 880 000	R 43 780 000	R 43 780 000	R 219 300 000
Social	CAPEX	R 7 864 000	R 7 864 000	R 7 364 000	R 7 364 000	R 7 364 000	R 37 820 000
	OPEX	R 13 734 000	R 68 670 000				
	TOTAL	R 21 598 000	R 21 598 000	R 21 098 000	R 21 098 000	R 21 098 000	R 106 490 000
Technical	CAPEX	R 53 333 700	R 52 748 700	R 47 486 200	R 46 971 200	R 46 971 200	R 247 511 000
	OPEX	R 30 512 600	R 152 563 000				
	TOTAL	R 83 846 300	R 83 261 300	R 77 998 800	R 77 483 800	R 77 483 800	R 400 074 000
Total	CAPEX	R 62 397 700	R 61 212 700	R 55 450 200	R 54 335 200	R 54 335 200	R 287 731 000
	OPEX	R 88 601 600	R 443 008 000				
***************************************	TOTAL	R 150 999 300	R 149 814 300	R 144 051 800	R 142 936 800	R 142 936 800	R 730 739 000
		R 150 999 300	R 149 814 300	R 144 051 800	R 142 936 800	R 142 936 800	
BENEFITS							
	Unit	Year 1	Year 2	Year 3	Year 4	Year 5	Total
CHANGE IN COI	NSUMPTION	·	·				
Reduced input vo	lume	20%	40%	60%	80%	100%	300%
Volume	m ³ /annum	436 400	872 800	1 309 200	1 745 600	2 182 000	6 546 000
Amount	R / annum	R 1 309 200	R 2 618 400	R 3 927 600	R 5 236 800	R 6 546 000	R 19 638 000
Increased revenu	ie water	20%	40%	60%	80%	100%	300%
Volume	m ³ /annum	1 774 200	3 548 400	5 322 600	7 096 800	8 871 000	26 613 000
Amount	R / annum	R 7 096 800	R 14 193 600	R 21 290 400	R 28 387 200	R 35 484 000	R 106 452 000
Total	R / annum	R 8 406 000	R 16 812 000	R 25 218 000	R 33 624 000	R 42 030 000	R 126 090 000
					Doubor	k portiod ware	<u>۶</u> ۵
					rayDad	k perioù - years	5.0

Table 6.1 Mopani Summary of Budget

The payback periods for the projects are rather long but in the long term it is expected to reduce water losses and make the municipalities more sustainable.

Table 6.2 Vhembe Summa	y of Budget	Requirements
------------------------	-------------	--------------

	Туре	Year 1	Year 2	Year 3	Year 4	Year 5	Total
TOTAL COSTS							
Institutional	CAPEX	R 400 000	R 600 000	R 0	R 0	R 0	R 1 000 000
	OPEX	R 600 000	R 3 000 000				
	TOTAL	R 1 000 000	R 1 200 000	R 600 000	R 600 000	R 600 000	R 4 000 000
Financial	CAPEX	R 800 000	R 800 000	R 0	R 0	R 0	R 1 600 000
	OPEX	R 38 195 080	R 190 975 400				
	TOTAL	R 38 995 080	R 38 995 080	R 38 195 080	R 38 195 080	R 38 195 080	R 192 575 400
Social	CAPEX	R 14 236 736	R 14 236 736	R 4 166 736	R 4 166 736	R 4 166 736	R 40 973 680
	OPEX	R 12 750 840	R 63 754 200				
	TOTAL	R 26 987 576	R 26 987 576	R 16 917 576	R 16 917 576	R 16 917 576	R 104 727 880
Technical	CAPEX	R 41 913 680	R 48 183 600	R 27 403 600	R 26 778 600	R 26 778 600	R 171 058 080
	OPEX	R 21 874 390	R 109 371 950				
	TOTAL	R 63 788 070	R 70 057 990	R 49 277 990	R 48 652 990	R 48 652 990	R 280 430 030
Total	CAPEX	R 57 350 416	R 63 820 336	R 31 570 336	R 30 945 336	R 30 945 336	R 214 631 760
	OPEX	R 73 420 310	R 367 101 550				
	TOTAL	R 130 770 726	R 137 240 646	R 104 990 646	R 104 365 646	R 104 365 646	R 581 733 310
		R 130 770 726	R 137 240 646	R 104 990 646	R 104 365 646	R 104 365 646	
BENEFITS							
	Unit	Year 1	Year 2	Year 3	Year 4	Year 5	Total
CHANGE IN CON	ISUMPTION						
Reduced input vol	ume	20%	40%	60%	80%	100%	300%
Volume	m ³ /annum	245 600	491 200	736 800	982 400	1 228 000	3 684 000
Amount	R / annum	R 491 200	R 982 400	R 1 473 600	R 1 964 800	R 2 456 000	R 7 368 000
Increased revenue	e water	20%	40%	60%	80%	100%	300%
Volume	m ³ /annum	1 110 800	2 221 600	3 332 400	4 443 200	5 554 000	16 662 000
Amount	R / annum	R 4 443 200	R 8 886 400	R 13 329 600	R 17 772 800	R 22 216 000	R 66 648 000
Total	R / annum	R 4 934 400	R 9 868 800	R 14 803 200	R 19 737 600	R 24 672 000	R 74 016 000
					Paybac	k period - years	7.9

	Туре	Year 1	Year 2	Year 3	Year 4	Year 5	Total
TOTAL COSTS							
Institutional	CAPEX	R 100 000	R 300 000	R 0	R 0	R 0	R 400 000
	OPEX	R 600 000	R 3 000 000				
	TOTAL	R 700 000	R 900 000	R 600 000	R 600 000	R 600 000	R 3 400 000
Financial	CAPEX	R 100 000	R 300 000	R 0	R 0	R 0	R 400 000
	OPEX	R 9 000 000	R 45 000 000				
	TOTAL	R 9 100 000	R 9 300 000	R 9 000 000	R 9 000 000	R 9 000 000	R 45 400 000
Social	CAPEX	R 750 000	R 750 000	R 250 000	R 250 000	R 250 000	R 2 250 000
	OPEX	R 1 440 000	R 7 200 000				
	TOTAL	R 2 190 000	R 2 190 000	R 1 690 000	R 1 690 000	R 1 690 000	R 9 450 000
Technical	CAPEX	R 10 861 000	R 13 736 000	R 6 539 000	R 6 314 000	R 6 314 000	R 43 764 000
	OPEX	R 4 952 800	R 24 764 000				
	TOTAL	R 15 813 800	R 18 688 800	R 11 491 800	R 11 266 800	R 11 266 800	R 68 528 000
Total	CAPEX	R 11 811 000	R 15 086 000	R 6 789 000	R 6 564 000	R 6 564 000	R 46 814 000
	OPEX	R 15 992 800	R 79 964 000				
	TOTAL	R 27 803 800	R 31 078 800	R 22 781 800	R 22 556 800	R 22 556 800	R 126 778 000
		R 27 803 800	R 31 078 800	R 22 781 800	R 22 556 800	R 22 556 800	
BENEFITS							
	Unit	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Change in Con	ISUMPTION						
Reduced input vol	ume	20%	40%	60%	80%	100%	300%
Volume	m ³ /annum	711 800	1 423 600	2 135 400	2 847 200	3 559 000	10 677 000
Amount	R / annum	R 3 658 652	R 7 317 304	R 10 975 956	R 14 634 608	R 18 293 260	R 54 879 780
Increased revenue	e water	20%	40%	60%	80%	100%	300%
Volume	m ³ /annum	769 000	1 538 000	2 307 000	3 076 000	3 845 000	11 535 000
Amount	R / annum	R 7 690 000	R 15 380 000	R 23 070 000	R 30 760 000	R 38 450 000	R 115 350 000
Total	R / annum	R 11 348 652	R 22 697 304	R 34 045 956	R 45 394 608	R 56 743 260	R 170 229 780
					Payba	ack period - years	0.7

7 CONCLUSIONS

Results from the study are summarised as follows:

- There is a large part of the study area which has formal infrastructure which enables effective metering and billing;
- The average consumption in the urban areas is very high and there is scope for reduction, which is expected to reduce the total demand and non-revenue water;
- The rural areas are characterised by intermittent supply with limited cost recovery and consumers revert to illegal connections to obtain water;
- The average consumption in the rural areas is within the acceptable range but there is huge inequality of supply. Any reduction will be redistributed with limited or no reduction in the total demand;
- The water tariffs in certain areas are not cost reflective and do not promote water conservation and water demand management;
- The municipalities lack funding to implement WC/WDM;
- The municipalities require additional staff to address and implement WC/WDM;
- Asset management lacks in some of the areas, which impacts on the assurance of supply; and
- Municipalities are grant dependant and have very high debtors.

Based on the above the following key strategic focus areas are recommended :

- Raise WC/WDM awareness within the organisation by setting-up a WC/WDM task team, chaired by senior officials or MMC to meet on monthly basis to address WC/WDM issues;
- Fill vacant positions and provide training and capacity building;
- Improve metering, reading, billing and cost recovery;
- Review the water tariff structure to be most cost reflective and promote WC/WDM;
- Improved tariff structures and cost recovery will increase revenue for the municipality which can be used to address the backlog in maintenance and improve service delivery;
- Implementing metering and cost recovery in the rural areas present several challenges and fixing internal plumbing leakage using local plumbers is recommended until the systems have stabilised and service delivery has improved;
- Implement awareness campaigns across all consumers to use water efficiently; and
- Improve management information through proper monthly reporting and records keeping. These reports should be discussed at the monthly EXCO meetings.

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Appendix A : Mopani DM Strategies and Business Plans



water affairs

Department: Water Affairs REPUBLIC OF SOUTH AFRICA

Department of Water Affairs

Water Demand Management Strategy and Business Plan

for Ba-Phalaborwa Local Municipality

May 2013

WCWDM STRATEGY AND BUSINESS PLAN: Signature Page

Title :	Development of a Water Conservation and Water Demand Management Strategy and Business Plan for Ba- Phalaborwa Local Municipality			
Authors :	WA Wegelin, Z Siqalaba, N Z	ondo		
Study Name:	Development of a Reconcilia	tion Strategy for the Luvuvhu	and Letaba Water Supply Syst	em
Status of Report :	Final draft			
Consultants :	WRP Consulting Engineers	(Pty) Ltd		
Approved for Consultants :	Study leader	WA Wegelin, PrEng		
	Position	Name	Signature	Date
Municipality	Ba-Phalaborwa Local Muni	cipality		
Approved for municipality :	Municipal Manager			
	Position	Name	Signature	Date
Department of Water Affairs	Limpopo Region			
Approved for Regional Office :				
	Position	Name	Signature	Date
Department of Water Affairs	Head Office			
Approved for Head Office				
	Position	Name	Signature	Date

WCWDM STRATEGY AND BUSINESS PLAN: Contact details

Province	Limpopo	WSA	No
Municipal Code	LIM334	Category	B3
District Municipality	Mopani		
Municipality	Ba-Phalaborwa		
Settlements	Corundum, Gravelotte, La Cotte, Leydsdorp, Lulekani, Murchison, Namakgale, Nondweni, Phalaborwa		

Information provided by					
Date	15/03/2012	5/03/2012			
Contact person	Emanuel Mashavha				
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Nater Affairs contact			
Directorate	ater Use Efficiency		
Adress	Private Bag X313, Pretoria, 0001		
Contact person	Koena Given Moabelo		
Telephone number	012 336 8174	Cell number	082 653 9216
E-mail	MoabeloK@dwa.gov.za		

Nater Balance Data Confidence Level (see legend below)			
Input volume	Estimated values		
Authorised consumption (Engineering functions)	Estimated values		
Meter reading and billing (Finance functions)	Estimated values		
Legend			
High level of accuracy	Calibrated bulk meters, >98% of consumers are metered < 10 years old, <2% billing complaints		
Medium level of accuracy	Functional bulk meters, >90% of consumers are metered, <10% billing complaints		
Low level of accuracy	Some functional bulk meters, >50% consumer meters, any age, meter reading & billing disfunctional		
Estimated values	No bulk or consumer meter readings, best estimate of water consumption		
No data	No data and no idea of water consumption		

F

WCWDM STRATEGY AND BUSINESS PLAN: Executive Summary

Mandala di Andre						110				
Municipal Code	IM334 Category B3									
District Municipality	<mark>cipality</mark> Mopani									
Municipality	Ba-Phalaborwa									
Settlements	Corundum, Gravelo	otte. La Cotte. Lev	/dsdorp, Lulekani.	Murchison, Nama	kgale. Nondweni.	Phalaborwa				
Executive summary										
Status quo										
Limited WCWDM activities are und	ertaken in the LM bu	ut there is signifi	cant management	information availa	ble to perform a ru	udimentary				
assessment of the water losses an Most of the towns are formal with t billing and cost recovery in the LM	assessment of the water losses and potential savings. The assessment is in line with RPMS, Blue Drop assessments, IDP and the WSDP. Most of the towns are formal with formal infrastructure in a significantly large area within the LM which enables proper scope for metering,									
The engineering departments in th	e Local Municipalitie	es are characteri	sed by high vacan	cies and limited c	apacity and skills.					
The current estimated unit consun	nption of 417 l/c/d is	extremely high a	and suggests the e	existence of huge	scope for reductio	n in NRW.				
The relationship with the commun	ity is generally posit	tive and the comr	nunities themselve	es are characteris	ed by a relatively l	ow indigent				
population. The water tariffs are n	ot cost reflective ho	wever, the consu	imers are not cogr	nisant of water con	servation practice	es.				
Strategy										
The municipality should focus on	proper record keepin	ng, analysis and	development of de	tailed manageme	nt information. All	vacancies must				
be filled as a matter of priority toge together to improve metering, billi	ether with skills tran	ster and capacity	/ building. The eng	gineering and fina	nce department m	ust work closer				
should be setup to report on a mo	nthly basis to counc	il on water loss f	iqures, leaks repai	ired, targets, prog	ress, consumer m	etering, billing				
and cost recovery.			5 ,	, .	···· , ··· ···	3, 5				
Proper metering, billing and cost r	ecovery should be s	supported by con	nmunity awareness	s that promotes re	porting of leaks, fi	ixing of private				
leaks and efficient use. Based on	the estimated availa	ble information,	a target reduction	in NRW of 49.2%	down to 23.8% and	d target input				
municipality should work towards	RPMS compliance a	and improvement	of their IDP.		ased on a proper	analysis. The				
Business Plan										
The budget requirements for the n	ext five years are su	mmarised in the	table below:							
Intervention	Year 1	Year 2	Year 3	Year 4	Year 5	Total				
Institutional	375 000	175 000	375 000	175 000	175 000	1 275 000				
Financial	7 946 640	7 846 640	7 846 640	7 746 640	7 746 640	39 133 200				
Social	3 587 808	3 387 808	3 387 808	3 387 808	3 387 808					
Technical	13 567 888	13 367 888	3 587 808 3 387 808 3 387 808 3 387 808 3 387 808 3 387 808							
Total	25 477 336		12 930 388	12 930 388	12 910 388	17 139 040 65 706 940				
	20 11 1 000	24 777 336	12 930 388 24 539 836	12 930 388 24 239 836	12 910 388 24 219 836	17 139 040 65 706 940 123 254 180				
Compliance	20 11 000	24 777 336	12 930 388 24 539 836	12 930 388 24 239 836	12 910 388 24 219 836	17 139 040 65 706 940 123 254 180				
Compliance Results from the Regulatory Peri	formance Measure	24 777 336 ment System (R	24 539 836 24 539 836 PMS)	24 239 836	12 910 388 24 219 836	17 139 040 65 706 940 123 254 180				
Compliance Results from the Regulatory Peri	formance Measure	24 777 336 ment System (R	24 539 836 24 539 836 PMS)	12 930 388 24 239 836	12 910 388 24 219 836	17 139 040 65 706 940 123 254 180 Performance				
Compliance Results from the Regulatory Peri Key	formance Measure	24 777 336 ment System (R tors	24 539 836 24 539 836	24 239 836	12 910 388 24 219 836 Required score	17 139 040 65 706 940 123 254 180 Performance assessment				
Compliance Results from the Regulatory Period Key KPI 1: Access to water supply	formance Measure	24 777 336 ment System (R tors	24 539 836 24 539 836 PMS)	Achieved KPI Score 3.165	12 910 388 24 219 836 Required score 3	17 139 040 65 706 940 123 254 180 Performance assessment Adequate				
Compliance Results from the Regulatory Peri Key KPI 1: Access to water supply KPI 2: Access to sanitation	formance Measure	24 777 336 ment System (R tors	24 539 836 24 539 836 PMS)	Achieved KPI Score 3.165 3.125	12 910 388 24 219 836 Required score 3 3	17 139 040 65 706 940 123 254 180 Performance assessment Adequate Adequate				
Compliance Results from the Regulatory Peri Key KPI 1: Access to water supply KPI 2: Access to sanitation KPI 3: Access to Free Basic Water	Formance Measure	24 777 336 ment System (R tors	24 539 836 PMS)	Achieved KPI Score 3.165 3.125 2.689	12 910 388 24 219 836 Required score 3 3 3 3	17 139 040 65 706 940 123 254 180 Performance assessment Adequate Adequate Concern				
Compliance Results from the Regulatory Peri Key KPI 1: Access to water supply KPI 2: Access to sanitation KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita	formance Measure Performance Indica	24 777 336 ment System (R tors	24 539 836 24 539 836 PMS)	Achieved KPI Score 3.165 3.125 2.689 0	12 910 388 24 219 836 Required score 3 3 3 3 3 3 3 3	17 139 040 65 706 940 123 254 180 Performance assessment Adequate Adequate Concern Crisis				
Compliance Results from the Regulatory Peri Key KPI 1: Access to water supply KPI 2: Access to sanitation KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita KPI 5: Drinking Water Quality man	formance Measure Performance Indica tion agement	24 777 336 ment System (R tors	12 930 388 24 539 836 PMS)	Achieved KPI Score 3.165 3.125 2.689 0 0	12 910 388 24 219 836 Required score 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	17 139 040 65 706 940 123 254 180 Performance assessment Adequate Adequate Concern Crisis Crisis				
Compliance Results from the Regulatory Peri Key KPI 1: Access to water supply KPI 2: Access to sanitation KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita KPI 5: Drinking Water Quality man KPI 6: Wastewater quality manage	formance Measure Performance Indica tion agement ment	24 777 336 ment System (R tors	24 539 836 24 539 836 PMS)	Achieved KPI Score 3.165 3.125 2.689 0 0 2	12 910 388 24 219 836 Required score 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	17 139 040 65 706 940 123 254 180 Performance assessment Adequate Adequate Concern Crisis Crisis Concern				
Compliance Results from the Regulatory Peri Key KPI 1: Access to water supply KPI 2: Access to sanitation KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita KPI 5: Drinking Water Quality man KPI 6: Wastewater quality manage KPI 7: Customer service quality	formance Measure Performance Indica tion agement ment	24 777 336 ment System (R tors	24 539 836 PMS)	Achieved KPI Score 3.165 3.125 2.689 0 0 0 2 1.75	12 910 388 24 219 836 Required score 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	17 139 040 65 706 940 123 254 180 Performance assessment Adequate Adequate Concern Crisis Crisis Concern Concern				
Compliance Results from the Regulatory Perf Key KPI 1: Access to water supply KPI 2: Access to sanitation KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita KPI 5: Drinking Water Quality man KPI 6: Wastewater quality manage KPI 7: Customer service quality KPI 8: Institutional effectiveness	formance Measure Performance Indica tion agement ment	24 777 336 ment System (R tors	24 539 836 PMS)	Achieved KPI Score 3.165 3.125 2.689 0 0 2 1.75 3.343	12 910 388 24 219 836 Required score 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	17 139 040 65 706 940 123 254 180 Performance assessment Adequate Adequate Concern Crisis Crisis Concern Concern Concern				
Compliance Results from the Regulatory Peri Key KPI 1: Access to water supply KPI 2: Access to sanitation KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita KPI 5: Drinking Water Quality man KPI 6: Wastewater quality manage KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance	formance Measure Performance Indica tion agement ment	24 777 336 ment System (R tors	PMS)	Achieved KPI Score 3.165 3.125 2.689 0 0 2 1.75 3.343 2.929	12 910 388 24 219 836 Required score 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 4	17 139 040 65 706 940 123 254 180 Performance assessment Adequate Adequate Concern Crisis Crisis Concern Concern Concern Concern				
Compliance Results from the Regulatory Peri Key KPI 1: Access to water supply KPI 2: Access to sanitation KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita KPI 5: Drinking Water Quality manage KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance KPI 10: Strategic asset manageme	formance Measure Performance Indica tion agement ment nt	24 777 336 ment System (R tors	24 539 836 24 539 836 PMS)	Achieved KPI Score 3.165 3.125 2.689 0 0 2 1.75 3.343 2.929 4.534	12 910 388 24 219 836 Required score 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	17 139 040 65 706 940 123 254 180 Performance assessment Adequate Adequate Concern Crisis Crisis Concern Concern Concern Concern Concern Excellent				
Compliance Results from the Regulatory Peri Key KPI 1: Access to water supply KPI 2: Access to sanitation KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita KPI 5: Drinking Water Quality manage KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance KPI 10: Strategic asset manageme KPI 11: Water use efficiency	formance Measure Performance Indica tion agement ment nt	24 777 336 ment System (R tors	24 539 836 24 539 836 PMS)	Achieved KPI Score 3.165 3.125 2.689 0 0 2 1.75 3.343 2.929 4.534 No data	12 910 388 24 219 836 24 219 836 3 8 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	17 139 040 65 706 940 123 254 180 Performance assessment Adequate Adequate Concern Crisis Crisis Concern Concern Concern Concern Concern No data				
Compliance Results from the Regulatory Peri Key KPI 1: Access to water supply KPI 2: Access to sanitation KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Water KPI 5: Drinking Water Quality manage KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance KPI 10: Strategic asset manageme KPI 11: Water use efficiency	formance Measure Performance Indica tion agement ment nt	24 777 336 ment System (R tors	12 930 388 24 539 836 PMS)	Achieved KPI Score 3.165 3.125 2.689 0 0 2 1.75 3.343 2.929 4.534 No data	12 910 388 24 219 836 Required score 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	17 139 040 65 706 940 123 254 180 Performance assessment Adequate Adequate Concern Crisis Crisis Concern Concern Concern Concern Concern Concern No data				
Compliance Results from the Regulatory Peri Key KPI 1: Access to water supply KPI 2: Access to sanitation KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita KPI 5: Drinking Water Quality manage KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance KPI 10: Strategic asset manageme KPI 11: Water use efficiency	formance Measure Performance Indica tion agement ment nt pp Assessments	24 777 336 ment System (R tors	24 539 836 PMS)	Achieved KPI Score 3.165 3.125 2.689 0 0 2 1.75 3.343 2.929 4.534 No data	12 910 388 24 219 836 Required score 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	17 139 040 65 706 940 123 254 180 Performance assessment Adequate Adequate Concern Crisis Crisis Concern Concern Concern Concern Concern Excellent No data				
Compliance Results from the Regulatory Peri Key KPI 1: Access to water supply KPI 2: Access to sanitation KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita KPI 5: Drinking Water Quality manage KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance KPI 10: Strategic asset manageme KPI 11: Water use efficiency Results from Blue and Green Droc Assessment Blue drop	formance Measure Performance Indica tion agement ment nt pp Assessments	24 777 336 ment System (R tors	2 930 388 24 539 836 PMS)	Achieved KPI Score 3.165 3.125 2.689 0 0 2 1.75 3.343 2.929 4.534 No data 2010	12 910 388 24 219 836 Required score 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	17 139 040 65 706 940 123 254 180 Performance assessment Adequate Adequate Concern Crisis Crisis Concern Concern Concern Concern Excellent No data				

WCWDM STRATEGY AND BUSINESS PLAN: Municipal Water Conservation and Water Demand Management Implementation Process Map

	Performed by WCWDM 9	Implementation Performed by Department Reviewed by SSC and DWA	Monitoring and Review Performed by Department			
Vision	Mission	Status Quo Technical	Strategy Technical	Business Plan Technical	Implementation All Projects	Deliverables Technical
Water Services Act, 108 of 1997 Provide water services in an efficient, affordable, equitable, economical and sustainable manner to all consumers or notexical consumers in its rate of	Presidential Target (State of the Nation address 2010) Reduce water Losses by half by 2014	Information on demographics, demands, water loss, level of service SWOT Analysis : Strengths, Weaknesses, Opportunities & Threats of technical department (human resources, processes, Goals and objective: Achieving water loss reduction target in terms of available resources and non- revenue water. If no target exists, then goal is to develop a target. Bulk metering Leakage control and repair Sectorisation and zone met Logging and water loss moti- target in terms of available resources and non- revenue water. If no target exists, then goal is to develop a target. Bulk metering Leakage control and repair Sectorisation and zone met Logging and water loss mot- new water sectorisation and present sectorisation and zone met Logging and water loss mot- revenue water. If no target exists, then goal is to develop a target. Bulk metering Leakage control and repair Sectorisation and zone met Logging and water loss mot- revenue water. If no target exists, then goal is to develop a target. Bulk metering Leakage control and repair Sectorisation and zone met Logging and water loss mot- revenue water. If no target exists, then goal is to develop a target. Bulk metering Leakage control and repair Resolvice intermittent supph Pressure management Clean out and recommissic Training and capacity build If by 2014 Water loss SWOT analysis Bulk metering		Bulk metering Leakage control and repair Sectorisation and zone metering Logging and water loss monitoring Non domestic and domestic metering and audits Resolve intermittent supply Pressure management Clean out and recommission existing infrastructure Training and capacity building	Council approval of Strategy and Business Plan Identify key stakeholders - setup working committees Appoint PSP Appoint contractor Assess / determine baseline	Record keeping and reporting process Monthly IWA Water Balance calculation for system and DMA No visible leakage Asset management Comply with Regulations R509 of 2001 Responsible WCWDM individual/unit Measurement against goals
jurisdiction.	Sustainable manner to all consumers or potential consumers in its area of jurisdiction.		Economic SWOT Analysis : Strengths, Weaknesses, Opportunities and Threats of funding sources Goals and objectives: Allocate sufficient funding to address WCWDM How : Identify key principles to obtain funding (improved metering and billing, cost recovery, external funding, etc.) Actions : Responsible person, measurement and timelines to address SWOT analysis	Economic Review tariff structure Ensure effective metering and billing system Review CAPEX budget in terms of WDM goals Review OPEX budget in terms of WDM goals Develop business plan for external funding Training and capacity building	Project Quality Control Project Financial Management Establish record keeping and reporting processes Assess benefits from implementation Establish take-over procedure	Economic Sufficient budget allocation Realistic tariff setting Efficient meter reading, billing and cost recovery process Measurement against goals
BIG HAIRY AND AUDACIOUS VISION If it doesn't scare you, its not big enough		Social Customer profile Communication dynamics between WSA and consumers Existing support structures for consumers Level of stakeholder involvement	Social SWOT Analysis : Strengths, Weaknesses, Opportunities and Threats of consumers and institution Goals and objectives: Informed and supportive consumer and institution How : Identify key principles to develop turn consumers into customers (political, schools, specific consumer groups, water wise, etc.) Actions : Responsible person, measurements and timelines to address SWOT analysis	Social Raise awareness at political levels Raise awareness at institutional levels Identify and engage relevant stakeholders Establish customer care centre Training and capacity building Conduct WC/WDM education and awareness Conduct schools awareness campaigns	Training and capacity building	Social Political support Institutional support Informed, involved and supportive consumer Measurement against goals
		Institutional Existence of approved policies Existence of approved bylaws Regulatory compliance Legislative compliance	Institutional SWOT Analysis : Strengths, Weaknesses, Opportunities and Threats of policies, bylaws, political support, enforcement, Regulatory compliance Goals and objectives: Reform organisation to support WCWDM How : Identify key principles to obtain improve (improved political support, policies, enforcement, etc.) Actions : Responsible person, measurement and	Institutional Establish policies in terms of payment for services, arrears, Establish bylaws that addresses water loss reduction and efficiency Succession planning - ensure initiatives continue		Institutional Approved policies Approved bylaws enforcement Regulatory compliance Succession plan Measurement aga

Review and update strategy and business plan . Implement and regulate.

egy & Business Plan_Ba-Phalaborwa/Process Map

WCWDM STRATEGY : Definitions

Terminology

37		
Acronym	Description	Link
DWA	Department of Water Affairs	http://www.dwa.gov.za
WS RPMS	Water Services : Regulatory Performance Measurement System	http://www.dwa.gov.za/dir_ws/rpm/
WS NIS	Water Services : National Information System	http://www.dwa.gov.za/dir_ws/wsnis/
FBS	Water Services : Free Basic Water Project	http://www.dwaf.gov.za/dir_ws/fbw/
NRW	Non-revenue water. Volume of water for which no revenue is received (preferred term)	
UAW or UFW	Unaccounted-for water. Volume of water lost due to physical and apparent losses (not preferre	d term)
StatsSA NFC	Statistics South Africa : Non-Financial Census of Municipalities P9115	http://www.statssa.gov.za/

Information sources

Item	Source	Calculation
Population	DWA WS NIS or municipality	
Households	DWA WS NIS or municipality	
Connections - metered	Extrapolated 2007 DWA - WS FBW serviced above RDP or municipality	
Connections - Unmetered	Extrapolated 2007 DWA - WS FBW serviced at RDP or municipality	
Length of mains (km)	Actual value or calculated at average of 50 connections / km of mains	# connections ÷ 50
(A) System input volume	Total volume of potable water supplied by the municipality in kl/annum	
(B) Billed metered consumption	Total volume of water metered and billed by the municipality in kl/annum	
(C) Billed unmetered consumption	Total volume of water unmetered and billed by the municipality in kl/annum	
Underlined values	Calculated values using trends or averages	

Standard IWA Water Balance

	AUTHORISED CONSUMPTION: 1 + 2 + 3 + 4 Total water used for legitimate purposes 1. Billed metered water 2. Billed un-metered water 3. Unbilled metered water	BILLED METERED: 1. Water is billed for based on a metered consumption (see further explanatory notes). REVENUE WAT 1. Water is billed for based on a flat rate tariff (ie. Not based on a flat rate tariff (ie. Not based on a meter reading) Billed metered 2. Free basic water used through unbilled un-metered stand pipes or yard connections (see further explanatory notes) Billed metered	ER:
SYSTEM INPUT VOLUME: 1 + 2 + 3 1. Total water treated and measured at treatment works outlet	 Unbilled un-metered water 	UNBILLED METERED: 1. Usually very small in RSA, can include government buildings or parks that is metered but not billed.	
 Total water pumped directly from boreholes into reticulation system Total water purchased from bulk water services provider 		UNBILLED UN-METERED: 1. Estimated water used for legitimate purposes such as fire fighting. Also usage above free basic water for un- metered unbilled standpipe and yard connection usage. (see notes) NON REVENUE W 1+2+3+4	ATER:
Unaccounted for Water (UAW / UFW)	TOTAL LOSSES: 1 + 2 Total water not used for legitimate purposes 1. Apparent losses 2. Real losses	APPARENT LOSSES: 1+2+3 1. Unbilled metered 1. Water used through illegal connections 1. Unbilled un-metered 2. Water used but not billed for because of inaccurate meters 3. Apparent losses 3. Water used but not billed for because of data transfer errors, low estimated readings or any administrative errors. 8. Real losses 1. Unbilled metered 9. Apparent losses 1. Water used but not billed for because of data transfer errors, low estimated readings or any administrative errors. 1. Unbilled metered 1. Water that leaks from the system through pipes and connections or overflows from reservoirs 1. Unbilled metered	

Apparent Losses

Illegal connections	%	Water Quality	Meter age and accuracy	%	Data transfer	%
Very high	10%	Very poor	> 10 years	10%	Very poor	9%
High	8%	Poor		8%	Poor	7%
Average	6%	Average	5-10 years	6%	Average	5%
Low	4%	Good		4%	Good	3%
Very low	2%	Very good	< 5 years	2%	Very good	1%

WCWDM STRATEGY : Base Information

Mun	Municipality name Ba-Phalaborwa				Date of current data	2012
				Current	Target	Change
	Demographics	IDP Ref				Ŭ
	Population	Par 2.4	No	155 599	155 599	0
	Urban		No	132 259	132 259	
	Rural		No	23 340	23 340	
	Households	Par 2.4	No	39 484	39 484	0
	Urban		No	39 484	39 484	
	Rural		No	0	0	
	Household density		Pop / HH	4.30	3.94	
	Growth rate: 5 years	Par 4.1.3	%			0
	Consumer units	Par 3.3	No	67	67	0
	Residential		No		0	
	Police stations		No	4	4	
	Magistrates Offices		No		0	
	Business		No		0	
	Dry industries		No		0	
	Office buildings		No		0	
	Prisons		No		0	
	Schools		No	55	55	
	Health facilities		No	8	8	
	Wet industries		No		0	
	Mining		No		0	
	Resorts and tourism		No		0	
	Infrastructure					
	Water Level of Service	Par 3.1	no	33 553	33 553	0
	Stand pipes		HH	7 636	7 636	0
	Yard connections		HH			
	House connections		HH	25 917	25 917	
	Length of mains (km)	Par 5.1.2	km	594.7	594.7	0
g	Connections / km of mains		No / km	56.4	56.4	
Dat	Average system pressure		m	40	30	-10
put	Time pressurised		%	100%	100%	0
<u>-</u>	Sanitation Level of Service	Par 3.2		33 553	33 553	0
	None water borne		No			
	Water borne low flush		No	15 501	15 501	
	Septic tanks / conservancy		No	18 052	18 052	
	Water borne - WTW		No			
	Apparent losses		%	17%	17%	0%
	Consumer meter age		%	6%	6%	0%
	Illegal connections		%	6%	6%	0%
	Data transfer		%	5%	5%	0%
	Water balance data					
	System input volume		k€/annum	23 660 000	18 928 000	-4 732 000
	Own sources		k€/annum			0
	Other sources		k€/annum	23 660 000	18 928 000	-4 732 000
	Billed metered consumption		k€/annum	12 017 000	14 420 400	2 403 400
	Billed unmetered consumption		k€/annum	0		0
	Unbilled metered consumption		k€/annum	0	0	0
	Unbilled unmetered consumption		k€/annum	0	0	0

	Water Tariffs					
	Purchase of bulk water	Par 10.2	R/annum	R 82 810 000	R 82 810 000	R 0.00
	Total operating cost		R/annum	R 165 620 000	R 165 620 000	R 0.00
	Rate - Purchase of hulk water		D/kp	P 3 50	P / 38	110.00
	Rate - Total operating		D/ke	P 7 00	D 9 75	
	Domostic Water Tariffe	Dor 10 3	IVAL	N 7.00	K 0.75	
		Fai 10.3	le Q/ma a méla	D 2 69	D 2 69	D 0 00
		0	k@/month	R 3.00	R 3.00	R 0.00
	6 to	30	ke/month	R 4.60	R 4.60	R 0.00
	30 to	60	Ke/month	R 6.15	R 6.15	R 0.00
	60 to	90	Ke/month	R /.38	R /.38	R 0.00
	to		ke/month		R 0.00	R 0.00
	> to	90	k€/month	R 8.90	R 8.90	R 0.00
						. =
	System input volume		kť/annum	23 660 000	18 928 000	-4 732 000
	Authorised Consumption		kℓ/annum	12 017 000	14 420 400	2 403 400
	Billed authorised		k€/annum	12 017 000	14 420 400	2 403 400
Ś	Billed metered		k€/annum	12 017 000	14 420 400	2 403 400
tior	Billed unmetered		k€/annum	0	0	0
sula	Unbilled authorised		kℓ/annum	0	0	0
Calo	Unbilled metered		kℓ/annum	0	0	0
e	Unbilled unmetere	ed	k€/annum	0	0	0
alan	Water losses		k€/annum	11 643 000	4 507 600	-7 135 400
r B	Apparent losses		k€/annum	1 979 310	766 292	0
/ate	Real losses		k€/annum	9 663 690	3 741 308	-7 135 400
5	UARL		k€/annum	548 186	411 140	0
	Potential real loss	saving	k€/annum	9 115 504	3 330 168	-7 135 400
	Revenue water	Ŭ	k€/annum	12 017 000	14 420 400	2 403 400
	Non-Revenue water		k€/annum	11 643 000	4 507 600	-7 135 400
	System input volume unit cor	sumption				
	litres / capita / day		8/c/d	417	333	-84
	m ³ / household / month		m ³ /hh/month	50	40	-10
	m ³ / connection / month		m ³ /conn/month	59	47	-12
	Authorised unit consumption			00		
	litres / canita / day		8/c/d	212	254	42
	m ³ / household / month		m ³ /bh/month	212	204	
	$m^3/connection/month$		m ³ / conn / month	20	36	5
	Water loss indicators			50	50	0
		/ day	Pleannlday	45	24	11
ors	CAPL + Losses / connection	l/uay	e/conn/day	4J 790	205	-11
cat	CARL . LOSSES / CONNection		C / Comin / uay	109	505	-404
ipu	Infrastructure Leakage Inde	X (ILI)	-	17.03	9.10	-9
Ce	Losses / km mains / day		m° / km / day	44.5	17.2	-27
mar	Non-revenue water		%	49.2%	23.8%	-25.4%
for	Unbilled Consumption		%	0.0%	0.0%	0.0%
Pel	Water Losses		%	49.2%	23.8%	-25.4%
Key	Apparent losses		%	8.4%	4.0%	-4.3%
	Real losses		%	40.8%	19.8%	-21.1%
	Water balance reduction targe	ets				
	System input volume		%		-20.0%	
	Authorised Consumption		%		20.0%	
	Billed authorised		%		20.0%	
	Billed metered		%		20.0%	
	Billed unmetered		%		0.0%	
	Unbilled authorised		%		0.0%	
	Unbilled metered		%		0.0%	
	Unbilled unmetere	ed	%		0.0%	
Sis	Average monthly water bill / c	onnection	R / conn / month	R 132	R 169	R 37
ylar	Estimated annual income		R / annum	R 53 341 217	R 68 198 486	R 14 857 268
t Ar	Total water supply cost		R / annum	R 165 620 000	R 165 620 000	RO
Cos	Net profit / loss		R / annum	-R 112 278 783	-R 97 421 514	R 14 857 268
	Town and description		Source	MI/day	m ³ /annum	million m ³ /annum
	i offit and description		Jource	minuay		minuti in /annum

tg d	Ba-Phalaborwa / Lulekani / Namakgale	Blue Drop 2012	182.60	66 649 000	66.649
e an pac				0	0.000
urc Ca				0	0.000
r So					0.000
ate eatm					
≥ ^z					
	Total		182.60	66 649 000	66.649

Current IWA Water Balance Diagram (million m ³ /annum)									
System Input Volume = 23.660	Authorised consumption = 12.017	Billed authorised = 12.017	Billed metered = 12.017 Revenue water = 1:						
		Apparent losses = 1.979	Apparent losses = 1.979						
System Input Volume = 23.660	Water losses = 11.643	Real Losses = 9.664	Real Losses = 9.664	Non-revenue water = 11.643					

Target IWA Water Balance Diagram (million m ³ /annum)									
System Input Volume = 18.928	Authorised consumption = 14.420	Billed authorised = 14.420	Billed metered = 14.420	Revenue water = 14.420					
		Apparent losses = 0.766	Apparent losses = 0.766						
	Water losses = 4.508	Real Losses = 3.741	Real Losses = 3.741	Non-revenue water = 4.508					
Reduced Input Volume = 4.732									

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WCWDM STRATEGY : Water Balance History

	Municipality Name Ba-Phalaborwa									
				1	1	1		1	1	
		Year ending	Jun-06	Jun-07	Jun-08	Jun-09	Jun-10	Jun-11	Jun-12	Jun-18
	Population		139 225	140 061	141 114	141 962	137 283	145 520	155 599	220 720
	Households		34 332	34 537	34 799	35 005	33 851	35 882	39 484	56 009
	Connections - met	ered	30 780	30 965	31 198	31 385	30 351	<u>32 172</u>	<u>34 102</u>	48 375
	Connections - Unme	etered	3 759	3 781	3 810	3 833	3 706	<u>3 929</u>	<u>4 164</u>	5 907
Data	Length of mains (km)	<u>653</u>	<u>657</u>	<u>662</u>	<u>666</u>	<u>644</u>	<u>683</u>	<u>724</u>	1 027
Input	System input volume	kl/annum	20 877 272	24 204 290	25 902 145	27 600 000	26 122 500	24 645 000	23 660 000	18 928 000
	Billed metered consumption	kl/annum	13 771 691	11 638 970	13 000 000	13 000 000	12 508 637	12 017 274	12 017 274	14 420 400
	Billed unmetered consumption	kl/annum	842 400	700 920						0
	Unbilled metered consumption	kl/annum								0
	Unbilled unmetered consumption	kl/annum								0
tions	Revenue water	kl/annum	14 614 091	12 339 890	13 000 000	13 000 000	12 508 637	12 017 274	12 017 274	14 420 400
alcula	Non-Revenue water	kl/annum	6 263 181	11 864 400	12 902 145	14 600 000	13 613 863	12 627 726	11 642 726	4 507 600
ance C	Water Losses	kl/annum	6 263 181	11 864 400	12 902 145	14 600 000	13 613 863	12 627 726	11 642 726	4 507 600
er Bala	% Non-revenue w	ater	P 30.0%	P 49.0%	P 49.8%	P 52.9%	P 52.1%	P 51.2%	P 49.2%	P 23.8%
Wat	% Water Losse	s	P 30.0%	P 49.0%	P 49.8%	P 52.9%	P 52.1%	P 51.2%	P 49.2%	P 23.8%
ន	Input : Litres / capita	ı / day	P 411	P 473	P 503	P 533	P 521	隆 464	P 417	P 235
dicato	Input: m³ / household	/ month	۶1 🖗	۴ 58	62 ┡	66 প	64 🥐	P 57	۴ 50	28 🎙
nce in	Billed : Litres / capita	a / day	P 288	241	P 252	ح 251	P 250	P 226	P 212	۲9 🖗
forma	Billed : m³ / household	/ month	۶ کې	₽ 30	۴ 31	۴ 31	۶ کې	28 🏱	۶ کې	21
ey per	% Population gro	wth	0.66%	0.60%	0.75%	0.60%	-3.30%	6.00%	6.93%	51.68%
¥	% Water demand g	rowth	4.17%	15.94%	7.01%	6.55%	-5.35%	-5.66%	-4.00%	-23.20%
	Source of information		DWA NIS StatsSA NFC	DWA NIS StatsSA NFC	DWA NIS	DWA NIS StatsSA NFC	DWA NIS			



WCWDM STRATEGY : Qualitative Scorecard

Municipality Name Ba-Phalaborwa

Introduction

The purpose of this section is to perform a qualitative evaluation of the municipality's water business. The objectives are as follows :

SWOT Analysis	External - Opportunities Positive external conditions which you don't control which you could take advantage of	External - Threats Negative conditions you don't control but could minimise their effects
Internal - Strengths Positive aspects under your control and on which you may wish to capitalise	Strengths and Opportunities (SO) – Strategies that use strengths to maximize opportunities.	Strengths and Threats (ST) – Strategies that use strengths to minimize threats.
Internal - Weaknesses Negative aspects under your control (to a large extent) which you could plan to improve	Weaknesses and Opportunities (WO) – Strategies that minimize weaknesses by taking advantage of opportunities.	Weaknesses and Threats (WT) – Strategies that minimize weaknesses and avoid threats.

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
1	INSTITUTIONAL REVIEW				
1.1	Water and Sanitation department structure				
1.1.1	Is there an approved organogram for the Water and Sanitation Department?	There is an approved organogram in place.	0	Review the existing organogram and ensure that it incorporates WC/WDM personnel in consultation with the District.	1
1.1.2	What is the vacancy rate in the department and is it a problem?	50% vacancy rate and only few vacancies have been advertised and are only for the sewer section.	S	Advertise and fill the identified critical vacant posts. Engage with the Department of finance to identify and explore possible funding options and budget requirements for the critical posts.	1
1.1.3	Does the department have the correct technical skills for the correct posts.	The department is fully skilled but lacking capacity.	0	Build on the existing skills base by instituting a mandatory training programme for technical staff. Invest in team building and workshop sessions incorporating the councillors and municipal management to ensure continuing high staff morale.	2
1.1.4	Is training and capacity building being done?	There is a workskills plan and general maintanance training is being done but no training on WC/WDM.	0	Institute a mandatory WC/WDM training programme for technical staff.	1
1.1.5	Are there sufficient support structures ito vehicles, equipment, materials etc.?	Critical spares are kept in stores. Procurement in general is problematic because it is controlled from the Mopani District offices. There are limitations in vihecles eg, no water tankers tracters are used to deliver water into the rural areas that are on intermittent supply.	т	Engage with the Mopani DM Department of Finance and allocate an adequate budget for the critical spares. Allocate a specific person who will be responsible for expediting equipment orders and managing quality control in terms of the procurement processes.	1

ITEM	CATEGORY	STATUS QUO		STRATEGY	PRIORITY
1.1.6	Does the municipality own any water loss control equipment such as loggers, listening sticks, etc.?	No water loss equipment.	0	It is recommended that loggers and simple leak detection equipment be purchased to improve water loss monitoring and management in the system.	3
1.2	Municipal support				
1.2.1	Describe the working relationship with other departments such finance, planning, housing etc.?	The relationship with the department of finance is fairly good however it needs to be improved, mothly meetings are not bieng conducted anymore. Not getting enough support from the district municipality, all capital projects are being implemented by district.	0	Establish a NRW steering committee comprising representatives from the technical, Mopani DM, communications and finance departments to improve communication and access to information.	1
1.2.2	Are the politicians supporting the department?	The politicians are not very supportive and does not fully understand the water business.	Т	Undertake a councillor WC/WDM induction programme to capitalise on the existing relationship and build a communication bridge between the municipality and the customers.	2
1.3	Public Private Partnerships				
1.3.1	Is there any major industrial or institutional role player in the area and is there co-operation? (i.e. Mines or industries that impacts heavily on the municipalities existence)	There are major role players in the area such as mines but they are ristricted to assist only in roads and electricity and not in water due to the fact that the municipality does not have the WSA status and municipal procurement is controlled at the district level.	0	Identify any other additional role players through the top consumer monitoring and conduct courtesy visits as a first phase of the programme. Establish a stakeholder forum if practicable, inform the DM and encourage the participation of the big industries in the forum	3
1.3.2	If yes, what does the co-operation involve and can it be expanded?	N/A			
1.4	Legislation and bylaws				
1.4.1	Does the municipality have a customer service charter?	No customer service charter in place.	w	Develop a customer service charter to ensure the customers are aware of the municipalities commitment and their responsibilities as consumers.	1
1.4.2	What is the status and age of the existing bylaws and do they address water loss management?	There are bylaws in place, and are being reviewed and they do address water demand management issues.	S	Periodically review the bylaws and ensure they encapsulate the latest developments and continue to promote WC/WDM.	3
1.4.3	Are bylaws enforced and if not, why not?	The bylaws are not enforced.	0	Develop partnerships with the credit control and legal departments as well as the SAPS and put appropriate bylaw enforcement mechanisms in place	2
1.4.4	What is the status and age of Water Services Development Plan?	N/A		N/A	
2	FINANCIAL REVIEW				
2.1	Financial Department				
2.1.1	What is your opinion of the Finance Department's ability to perform metering and billing	The billing is inaccurate, up to six moths estimates in some areas.	0	Improve communication and access to information between the technical and finance department through scheduled monthly team meetings.	1
2.1.2	Is training and capacity building being done?	Training has been provided for the meter readers and fafilitatde by HR. Spot checks are being done by the meter readers.	S	Plan a WC/WDM workshop for the finance personnel and meter readers to facilitate an improved understanding of the technical issues and information requirements.	1

ITEM	CATEGORY	GORY STATUS QUO		STRATEGY	PRIORITY
2.1.3	What is the state of the municipal metering and billing system?	95% of revenue collected by Ba-Phalaborwa local municipality is transfared to the district municipality as pat of service level agreement.	т		
2.1.4	What is your primary source of funding?	Equitable share, MIG through district and 5% of internal revenue.	0	Focus on improving metering and billing and cost recovery where practicable to reduce dependency on grant funding.	1
2.2	Tariffs				
2.2.1	Who prepares the water tariffs and what is it based on?	Department of finance sets the tariffs. The technical department makes inputs into the tariff setting and a percentage increase is applied per annum.	S	Obtain National Treasury tariff guidelines and review tariffs.	2
2.2.2	What is the tariff structure and does it promote WCWDM?	There is a rising block tariff in place, and it is being reviewed to a minimum of R3.90 per KI	S	Ensure that the rising block tariff is sufficiently differentiated in cost at each level to promote WC/WDM with the highest tariff at least twice the amount of the lowest tariff.	2
2.2.3	Is the water supplied considered affordable by the customers?				
2.3	Meter Reading and Billing				
2.3.1	Who performs the water meter readings, frequency and accuracy?	Internal municipal staff does the meter reading.	S	Annually monitor the frequency of meter reading and customer complaints of inaccurate billing to determine the effectiveness of the meter readers.	2
2.3.2	Are the meter readers trained and can they report leakage when encountered on site?	The meter readers are provided with training internaly.	S	Continue providing training for the meter readers on an annual basis particularly on site training based on feedback from the consumers.	3
2.3.3	Is the water bill understandable and informative?	The bill is understandable but it can still be improved and consumption can be seen on the bill.	0	Consider including water conservation tips and information in the water bill. It is also recommended to display 6 months graphical consumption data on the bill to aid consumers in effectively monitoring water use	1
2.4	Credit control				
2.4.1	Is credit control being implemented and by whom?	Credit control is being implemented by Finance	0	Through the legal department, develop appropriate credit control enforcement mechanisms to improve revenue recovery.	2
2.4.2	What is the current level of non-payment?	Level of non payments is high at the township areas such as Namagale.	т	Focus on promoting payment for services in the metered areas through the councillors and education and awareness.	1
2					
3	OUCIAL REVIEW				
3.1.1	Describe the general consumer profile i.e. Income levels, indigence, unemployment, literacy	Level of indigents is about 3000 at this stage, mostly around the township and rural areas. The free basic allocation is 6 KI and there is no volume restrictors installed for indigent consumers that cant control their consumption. High level of unemployment and seasonal farm workers within Ba- Phalaborwa.	0	Focus on educating the indigent population on efficient water use and the importance of the free basic allocation as well as its limitations.	1

ITEM	M CATEGORY STATUS QUO		SWOT	STRATEGY	PRIORITY
3.1.2	Describe the relationship between customers and the municipality and reasons?	The relationship with the consumers is not very good due to intermittent supply especially in the rural and township areas, not enough water supply to the villagers		Engage with the consumers through the councillors and tribal authorities and gain their support and cooperation whilst the municipality resolves the water services challenges. Build on the relationship with all the consumers and strengthen it through community awareness campaigns.	2
3.2	Customer awareness				
3.2.1	Are consumers informed regarding the value of water?	The consumers are very concious of the value of water due to the lack of water supply in some townships and villages that have been experienced in the past years.	S	Continue to promote water efficiency. Utilise this positive community attribute and encourage the installation of water efficient devices and leak repair to further decrease water losses.	2
3.2.2	What is the level of leakage reporting by the community and what method do they use?	The levels of leakage reporting are very low. consumers in the townships reports leaks by calling the foreman on his cellphone.	0	Publicise the customer care services through the councillors, pamphlets attached to water bills and local media to promote reporting of leakage.	3
3.2.3	What are the most prominent consumer behavioural challenges encountered by the municipality?	Vandalism is problematic in certain areas, electrical cables are stolen at pump stations and boreholes.	т	The community awareness campaign should be tailored to address these problems. The tribal authorities and councillors should be encouraged to make these issues an agenda at all public meetings held in the different wards.	1
3.2.4	Is xeriscaped gardening and rain water harvesting encouraged?	No rain water harvesting at this stage.	0	As part of a community awareness campaign, encourage consumers to harvest rain water and utilise it for garden irrigation and cleaning to reduce the demand for potable water.	2
3.2.5	Are radio campaigns, bill board, pamphlets, informative billing used to inform and educate customers?	The last campaign was conducted in 2010 via local news papers.	W	Develop simple visual material in the form of pamphlets which can be used to educate consumers on efficient water use. Build on the media campaign undertaken and periodically publicise water tips on local radio stations and newspapers.	1
3.3	Schools awareness				
3.3.1	Number of primary and secondary schools?	55 schools in total	0	Engage with the schools through workshops and promote water conservation in the education sector.	1
3.3.2	Frequency and scope of schools awareness campaigns?	No programme in place yet but the schools will be targeted for intervention. There is a buget and support from the district in place for the programme	w	Establish a relationship with schools. Monitor their consumption on a monthly basis and undertake education and awareness. Huge benefit can be derived from this. The section 21 schools in particular should be visited, monitored and encouraged to fix leakage as the O&M budgets are operated by the school management for this category of schools.	1
3.3.3	Are goals and objectives monitored and controlled?	N/A.			
3.4	Customer Care Centre				
3.4.1	Does the municipality have a CCC and who operates it?	No customer care centre in place	W		

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
3.4.2	How and to whom are billing queries referred?	Queries are referred to the relevant departments and followed up by the finance department.	S	Obtain an electronic system to capture and monitor the queries referred and to track the resolution of the gueries.	2
3.4.3	To whom are the leak reports referred and do consumers have confidence in the reporting system?	Consumers generaly calls finance dept for queries and foreman for the reporting of leaks.	0		1

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
4	TECHNICAL REVIEW				
4.1	Measurement and control				
4.1.1	Is the system input volume measured, monitored and controlled?	Yes. There are bulk meters installed at the outlets of the reservoirs and are read on mothly basis when Lepelle water is reading inlet to the reservoirs.	s	Continue to read the bulk meters on a monthly basis and monitor the input volumes. Install bulk meters at all unmetered bulk connections and capture all the readings on a spread sheet to be updated on a monthly basis.	2
4.1.2	Is the water supply system sectorised into zones and districts?	No sectorisation in place.	0	Sectorise the water supply system into manageable sized areas or zones to enable improved monitoring of the system.	1
4.1.3	Are the supply to the zones and districts metered?	There are no zone meters in place.	W	Install zone meters and ensure that they are read on a monthly basis. The readings must be captured on a spread sheet.	2
4.1.4	Is the system monitored through a telemetry system?	Yes, all reservoirs are monitored by Lepelle water not internally			
4.1.5	What is the Frequency and detail of your water balance calculation?	No water balance calculations.			
4.1.6	Are minimum night flows, consumption trends and logging used to monitor the system?	No MNF analysis is being conducted.	0	Obtain and install logging equipment periodically on the bulk meters once they have been installed and conduct MNF analysis to determine leakage levels and areas experiencing high or low pressures.	3
4.1.7	Are monthly management reports prepared and key performance indicators measured?	A monthly water balance is developed but there is low confidence in the numbers. There is monthly report produced but the KPI's are not necessarily measured. The numbers are tracked.	0	Consolidate the available data from thereservoirs outlet meters and from Lepelle Water (capacity of treatment works) and department of finance and compile a monthly NRW report with the relevant KPI's	1
4.2	Physical leakage			11113.	
4.2.1	What is the average age of the network, pipe material, replacement programme?	The network age is around 25+ years AC pipes and no plans for upgrades of the network that was done.		Set aside 5% of the CAPEX budget for the replacement of the network.	
4.2.2	Number of burst pipes reported and repaired per week / month and the average response time?	An average of 5 bursts per day occur with change of season, due to 95% of the network is a very old and pressure variations.	W	Undertake an infrastructure refurbishment programme. Also consider pressure management where practicable to reduce the number of pipe bursts and leakage.	1
4.2.3	What is the primary cause of burst pipes?	Mainly the old infrastructure and the trees that are planted on the side of the road.			
4.2.4	Are active leak detection programmes conducted?	There is no active leak detection taking place. Most of the leak detection is passive through the community.	0	Undertake active leak detection on the network on an annual basis. Select appropriate areas for the leak detection exercise based on the district meter readings. This can be done through the meter readers.	2
4.2.5	How often and for how long do reservoirs overflow?	Ba-Phalaborwa Local Municipality does not own any reservoirs			
4.2.6	Are water losses from treatment processes (backwash, etc.) monitored and minimised?	N/A.			
4.2.7	Is leakage on private properties a problem and if so, why?	Internal plumbing leakage is a problem but the municipality is addressing this. There is also a system in place to track the complaints and the work done per houshold.	S		

ITEM	CATEGORY STATUS QUO		SWOT	STRATEGY	PRIORITY
4.2.8	Are leaks on indigent private properties repaired and removal of wasteful devices encouraged?	The municipality is repairing leaks in indigent properties as a council resolution.	S	Review existing indigent policy and consider undertaking an internal leak audit and repair exercise for indigent and non paying consumers to drastically reduce the NRW.	3
4.3	Pressure management and control valves				
4.3.1	What is the average and maximum system pressure?				
4.3.2	Is basic or advanced pressure management being implemented?	No pressure managemnet generally.	0	Identify critical areas experiencing a high frequency of pipe bursts and pressure and install pressure reducing valves.	3
4.3.3	Are control valves pro-actively being maintained to prevent overflowing reservoirs?	N/A			
4.4	Consumer metering				
4.4.1	Are domestic and non-domestic consumers metered and which type of meter is used?	90% of All the consumers that are metered are from town and townships.	0	Undertake a non domestic meter audit and ensure that 100% of non domestic connections are metered as a priority.	2
4.4.2	What is the condition, age and accuracy of water meters?	The meters are between 2 and 4 years because of the meter replacement programme that started in 2008 financial year. Most of the meters are kent meters.	S	Meter replacement programme should continue until all wasterfull and meters are replaced and this should be done according to a maintenance program. An asset register should be implemented to use as a management tool to plan meter replacements.	
4.4.3	Are the top consumers pro-actively monitored on a monthly basis?	The top consumers are monitored on weekly basis. The technical department monitors this.	S	Continue monthly monitoring of top consumers and periodically perform courtesy visits and confirm that all supplies are metered and that the meters are still operational and accurate.	2
4.4.4	Describe the water quality and its impact on consumer water meters?	The water quality is good in town and in townships. There is an accumulation of salty water in certain villages that gets water from boreholes but generally the guality is acceptable.			
4.4.5	What is the prevalence and control of illegal connections?	Prevalence of illegal connections is very high and tribal authorities are demacating stands to communities which increases the number of illegal connections. Illegal connections are checked on adhoc basis	т	Actively monitor illegal connections and engage periodically with all stakeholders to control the illegal connections and undertake an audit on the meters. This can be conducted by the meter readers.	2
4.5	Management information				
4.5.1	Does the Municipality have an asset register and asset management programme?	The asset register is controlled by distict municipality. Its primarily a financial register.	0	Obtain the IMQS based asset register. Ensure that the new system can provide information of the lifespan of the infrastructure, its location, the time at which it must be replaced as well as its value to aid proper planning.	1
4.5.2	What is the status and age of as-built drawings?	There are no electronic copies of as-built drawings at Ba- Phalaborwa and the hard copies are very old and outdated.	W	Develop and update the as built drawings for the whole network.	1

Summary

ITEM	CATE	GORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
	SWOT Analysis	Helpful	Harmful			
	Internal factors (Staff, infrastructure, tools, equipment)	Formal town and infrastructure Bulk metering	No training and capacity building in the technical section No water loss equipment No electronic job card system to capture and monitor leak reports Limited or no asset management programme Old meters in certain areas Lack of proactive control valve maintenance No monthly monitoring of NRW KPI's Lack of vehicles and material to support O&M			
Internal factors (Politics, finance, consumers, economics) NRW stee Develop c Communit WC/WDM Informativ Obtain and		NRW steering committee and monthly reports Develop customer services charter Community schools awareness WC/WDM cousillor training Informative billing Obtain and utilise water loss equipment	Poor relationship with Finance Department High levels of internal plumbing leakage in the community High vacancy rate in the technical department High level of illegal connections in the townships Passive political constituency High indigent consumer base			

WCWDM STRATEGY : Quantitative Scorecard

Municipality Name Ba-Phalaborwa

Introduction

The purpose of the Water Conservation / Water Demand Management (WC/WDM) Scorecard is to ascertain the status quo of WC/WDM and evaluate the potential for WC/WDM measures to be implemented in these systems. The scorecard is aslo designed to enable the Regulator (Department of Water Affairs) to assess the current situation regarding losses and levels of wastage in all water supply systems countrywide. The scorecard consists of 25 multiple choice questions with each question getting scored from 0 to 4. The Regulator and WSA can track progress with each year the scorecard gets completed. Each question ends with an audit requirement which indicates what will be required by the Regulator should the questionnaire be audited. It also provides an indication on what is required in terms of each of the measures.

Completed by	PSP			
Date	Feb-12			Average
1. Development of Standard Water Balance	1			1
			-	
2. Pressurised supply to all consumers 100% of time	3			3
3. Residential Metering System	3			3
	n		-	
4. Non Residential Meters (Commercial, Industrial and Institutional)	3			3
		1		
5. Effective Billing System & Informative Billing	1			1
6. Network (Leakage) Complaints System	2			2
7. Billing and Metering Complaints System	1			1
8. Asset Register for Water Reticulation System	2			2
9. Asset Management - Capital Works	0			0
10. Asset Management - Operations and Maintenance	1			1
11. Dedicated WDM support	1			1
40. Asting Lookana Control	4			4
12. Active Leakage Control	1			1
13. Effective Sectorisation	1			1
44 Effective Dulk Meter Menonement	4			
	4			4
15 Effective Zone Meter Management and Night Flow Analysis	2			2
	2			2
16 Pressure Management and Maintenance of Pressure Peducing Values	٥			0
	0			U
47. As Duilt Demuises of Dulls and Dation lation is first and the	•			•
IT. AS-DUIL Drawings of Bulk and Reticulation Intrastructure	2			2
	-			
18. Schematic Layout of Water Infrastructure	0			0

Date	Feb-12			Average
19. Regulations and Bylaws	2			2
			-	
20. Tariffs	2			2
21. Technical Support to Customers	2			2
22. Removal of Unlawful Connections	2			2
			-	
23. Community Awareness and Education Programmes	2			2
24. Schools Awareness and Education Programmes	0			0
25. Newspaper & radio articles plus posters and leaflets for distribution	0			0
Total score (maximum 100)		0	0	38



WCWDM STRATEGY AND BUSINESS PLAN : BUDGET AND CASHFLOW

Municipality name Ba-Phalaborwa

COSTS										
	ltem	Unit	Quantity / year	Rate	Year 1	Year 2	Year 3	Year 4	Year 5	Total
INSTITUTIONAL / LEGISLATIVE INTERVENTIONS										
Institutional re	view:				100%					100%
CAPEX	Review organogram and fill vacancies	Sum	1	R 200 000	R 200 000	R 0	R 0	R 0	R 0	R 200 000
OPEX		Sum			R 0	R 0	R 0	R 0	R 0	R 0
Training and e	education :				50%	50%				100%
CAPEX	Not applicable	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Assume one training course / employee / annum	No	15	R 5 000	R 75 000	R 75 000	R 75 000	R 75 000	R 75 000	R 375 000
Customer cha	rter, policy, bylaws :						100%			100%
CAPEX	Review bylaws on 5 year cycles	Sum	1	R 200 000	R 0	R 0	R 200 000	R 0	R 0	R 200 000
OPEX	Enforce bylaws	Sum	1	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 500 000
FINANCIAL II	NTERVENTIONS									
Effective meter	ring and billing :				50%	50%				100%
CAPEX	Perform meter audit	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Ensure proper metering and billing of all consumers	No	35 212	R 100	R 3 521 200	R 17 606 000				
Water tariffs :					50%	•	50%			100%
CAPEX	Review water tariffs	Sum	1	R 200 000	R 100 000	R 0	R 100 000	R 0	R 0	R 200 000
OPEX	Not applicable	Sum		R 0	R 0	R 0	R 0	R 0	R 0	R 0
Informative bi	ling :				50%	50%			<u>.</u>	100%
CAPEX	Improve invoice to show monthly consumption	Sum	1	R 200 000	R 100 000	R 100 000	R 0	R 0	R 0	R 200 000
OPEX	Distribute information with bill	Sum	35 212	R 120	R 4 225 440	R 21 127 200				
						·				
SOCIAL INTE	RVENTIONS									
Consumer A	wareness Campaign :				20%	20%	20%	20%	20%	100%
CAPEX	Install bill boards, design pamphlets, radio campaigns	Sum	35 212	R 120	R 845 088	R 4 225 440				
OPEX	Target households on monthly basis with awareness cam	No	35 212	R 60	R 2 112 720	R 10 563 600				
Consumer He	alp and Support Desk :				100%				<u>.</u>	100%
CAPEX	Improve existing help-desk to provide one-stop service	Sum	1	R 200 000	R 200 000	R 0	R 0	R 0	R 0	R 200 000
OPEX	Maintain help-desk	Sum	1	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 500 000
Schools awa	reness :				20%	20%	20%	20%	20%	100%
CAPEX	Prepare schools competition, awareness, retrofit	No	55	R 20 000	R 220 000	R 220 000	R 220 000	R 220 000	R 220 000	R 1 100 000
OPEX	Monthly schools awareness campaign	No	55	R 2 000	R 110 000	R 550 000				

TECHNICAL IN	ITERVENTIONS									
Bulk metering	:				50%	50%				100%
CAPEX	New meter installations required	No		R 50 000	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Maintenance of existing bulk meters	No	5	R 1 000	R 5 000	R 5 000	R 5 000	R 5 000	R 5 000	R 25 000
Sectorisation :	:		•		50%	50%		<u>.</u>	·	100%
CAPEX	Setup of new DMA / PMAs	No	5	R 50 000	R 125 000	R 125 000	R 0	R 0	R 0	R 250 000
OPEX	Maintenance of DMA / PMAs including step testing	No	5	R 25 000	R 125 000	R 125 000	R 125 000	R 125 000	R 125 000	R 625 000
Active Leakage	e Control :				50%	50%				100%
CAPEX	Not applicable	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Fix all visible and reported leaks	No	681	R 1 000	R 681 000	R 3 405 000				
Valve audits			•		20%	20%	20%	20%	20%	100%
CAPEX	Locate, clean, repair, document network valves	No	2 724	R 4 000	R 2 179 200	R 10 896 000				
OPEX	Maintain network valves	No	545	R 1 000	R 544 800	R 2 724 000				
Leak and logg	ing equipment :				25%	25%	25%	25%		100%
CAPEX	Procure basic WDM equipment	Sum	4	R 20 000	R 20 000	R 20 000	R 20 000	R 20 000	R 0	R 80 000
OPEX	Not applicable	Sum			R 0	R 0	R 0	R 0	R 0	R 0
Telemetry :						50%	50%			100%
CAPEX	Install telemetry sites	No			R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Maintain telemetry sites	No			R 0	R 0	R 0	R 0	R 0	R 0
Retrofitting an	d removal of wasteful devices :		20%	20%	20%	20%	20%	100%		
CAPEX	Retrofit government buildings, schools, etc.	No	7 042	R 1 000	R 1 408 480	R 7 042 400				
OPEX	Not applicable	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
Mains replace	ment :	-			20%	20%	20%	20%	20%	100%
CAPEX	Replace critical leaking mains	km	13.6	R 100 000	R 272 400	R 1 362 000				
OPEX	Not applicable	km		R 0	R 0	R 0	R 0	R 0	R 0	R 0
Pressure mana	agement :				50%	50%				100%
CAPEX	New pressure management installations	No	3	R 75 000	R 112 500	R 112 500	R 0	R 0	R 0	R 225 000
OPEX	Maintain pressure management installations	No	3	R 5 000	R 15 000	R 15 000	R 15 000	R 15 000	R 15 000	R 75 000
Control valve	management :	-			50%	50%				100%
CAPEX	New control valve installations	No			R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Maintain all control valve installations	No			R 0	R 0	R 0	R 0	R 0	R 0
Consumer met	tering :	-			20%	20%	20%	20%	20%	100%
CAPEX	Replacement of old water meters	No	3 521	R 1 200	R 845 088	R 4 225 440				
OPEX	Replacement of broken and cycled water meters	No	1 761	R 1 200	R 2 112 720	R 10 563 600				
Top consumer	r audit :	-			20%	20%	20%	20%	20%	100%
CAPEX	Audit and retrofit non domestic consumers	No	1 761	R 10 000	R 3 521 200	R 17 606 000				
OPEX	Maintain non domestic consumers installations	No	1 761	R 500	R 880 500	R 880 500	R 880 500	R 880 500	R 880 500	R 4 402 500
GIS / CAD syst	tem :				50%	50%		•		100%
CAPEX	Setup CAD/ GIS system	Sum	1	R 200 000	R 100 000	R 100 000	R 0	R 0	R 0	R 200 000
OPEX	Maintain CAD / GIS system	Sum	1	R 200 000	R 200 000	R 200 000	R 200 000	R 200 000	R 200 000	R 1 000 000
Management I	nformation System :									100%

CAPEX	Setup basic MIS system to support WDM	Sum	1	R 200 000	R 100 000	R 100 000	R 0	R 0	R 0	R 200 000
OPEX	Maintain MIS system	Sum	1	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 500 000
Water loss m	onitoring and audits:	•			100%					100%
CAPEX	Perform proper analysis of distribution network	Sum	1	R 200 000	R 200 000	R 0	R 0	R 0	R 0	R 200 000
OPEX	Perform ad hoc analysis to monitor interventions	Sum	1	R 20 000	R 20 000	R 20 000	R 20 000	R 20 000	R 20 000	R 100 000
	ltem	Туре			Year 1	Year 2	Year 3	Year 4	Year 5	Total
TOTAL COST	ſS									
Institutional		CAPEX			R 200 000	R 0	R 200 000	R 0	R 0	R 400 000
		OPEX			R 175 000	R 875 000				
		TOTAL			R 375 000	R 175 000	R 375 000	R 175 000	R 175 000	R 1 275 000
Financial		CAPEX			R 200 000	R 100 000	R 100 000	R 0	R 0	R 400 000
		OPEX			R 7 746 640	R 38 733 200				
		TOTAL			R 7 946 640	R 7 846 640	R 7 846 640	R 7 746 640	R 7 746 640	R 39 133 200
Social		CAPEX			R 1 265 088	R 1 065 088	R 5 525 440			
		OPEX			R 2 322 720	R 11 613 600				
		TOTAL			R 3 587 808	R 3 387 808	R 17 139 040			
Technical		CAPEX			R 8 883 868	R 8 683 868	R 8 246 368	R 8 246 368	R 8 226 368	R 42 286 840
-		OPEX			R 4 684 020	R 23 420 100				
		TOTAL			R 13 567 888	R 13 367 888	R 12 930 388	R 12 930 388	R 12 910 388	R 65 706 940
Total		CAPEX			R 10 548 956	R 9 848 956	R 9 611 456	R 9 311 456	R 9 291 456	R 48 612 280
-		OPEX			R 14 928 380	R 74 641 900				
-		TOTAL			R 25 477 336	R 24 777 336	R 24 539 836	R 24 239 836	R 24 219 836	R 123 254 180
					R 25 477 336	R 24 777 336	R 24 539 836	R 24 239 836	R 24 219 836	
BENEFITS		-								
	ltem	Unit			Year 1	Year 2	Year 3	Year 4	Year 5	Total
CHANGE IN (CONSUMPTION									
Reduced inpu	t volume				20%	40%	60%	80%	100%	300%
Volume		m ³ /annum	4 732 000		946 400	1 892 800	2 839 200	3 785 600	4 732 000	14 196 000
Amount		R / annum	4 732 000	R 3.50	R 3 312 400	R 6 624 800	R 9 937 200	R 13 249 600	R 16 562 000	R 49 686 000
Increased rev	enue water				20%	40%	60%	80%	100%	300%
Volume		m ³ /annum	2 403 400		480 680	961 360	1 442 040	1 922 720	2 403 400	7 210 200
Amount		R / annum	2 403 400	R 7.00	R 3 364 760	R 6 729 520	R 10 094 280	R 13 459 040	R 16 823 800	R 50 471 400
Total		R / annum			R 6 677 160	R 13 354 320	R 20 031 480	R 26 708 640	R 33 385 800	R 100 157 400

Payback period - years 1.2

WC/WDM Projection summary and targets

Municipality name Ba-Phalaborwa

Water Demand projection	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 10.0% WDM Scenario							24.24	24.07	23.89	23.70	23.51	23.32
Less 15.0% WDM Scenario							24.03	23.65	23.26	22.86	22.44	22.02
Less 20.0% WDM Scenario							23.83	23.24	22.63	22.01	21.38	20.73
Actual Demand	20.04	20.88	24.20	25.90	27.60	26.12	24.65					
High population No WDM							24.65	24.90	25.15	25.40	25.65	25.91
Current yield	23.66	23.66	23.66	23.66	23.66	23.66	23.66	23.66	23.66	23.66	23.66	23.66

Savings	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 10.0% WDM Scenario							0.41	0.83	1.26	1.69	2.14	2.59
Less 15.0% WDM Scenario							0.62	1.24	1.89	2.54	3.21	3.89
Less 20.0% WDM Scenario							0.82	1.66	2.51	3.39	4.28	5.18
Actual savings							0.00					

% Reduction	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 10.0% WDM Scenario							1.67%	3.33%	5.00%	6.67%	8.33%	10.00%
Less 15.0% WDM Scenario							2.50%	5.00%	7.50%	10.00%	12.50%	15.00%
Less 20.0% WDM Scenario							3.33%	6.67%	10.00%	13.33%	16.67%	20.00%

Year / Year % Growth	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 10.0% WDM Scenario								-0.7%	-0.7%	-0.8%	-1.6%	-1.6%
Less 15.0% WDM Scenario								-1.6%	-1.7%	-1.7%	-3.5%	-3.7%
Less 20.0% WDM Scenario								-2.5%	-2.6%	-2.7%	-5.5%	-5.8%
Actual Demand		4.2%	15.9%	7.0%	6.6%	-5.4%	-5.7%					
High population No WDM								1.0%	1.0%	1.0%	1.0%	1.0%

Key Performance Indicators	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Population (DWA, NIS)	138 317	139 225	140 061	141 114	141 962	137 283	145 520					
Households (DWA, NIS)	34 109	34 332	34 537	34 799	35 005	33 851	35 882					
l/c/d	397	411	473	503	533	521	464					
m3/hh/month	49	51	58	62	66	64	57					
Demand MI/day	55	57	66	71	76	72	68					




WCWDM STRATEGY : RPMS Compliance

Municipality name Ba-Phalaborwa

Key questions from the Regulatory Performance Measurement System (RPMS) related to WC/WDM

KPI		ID	WSA Value
KPI 1 – .	Access to Water		
KPI 2 – /	Access to Sanitation		
KPI 3 – .	Access to Free Basic Water		
	Total poor households receiving Free Basic Water for last financial year	ID:012	
	Total poor households	ID:013	
KPI 4 – .	Access to Free Basic Sanitation		
	Total poor households receiving Free Basic Sanitation for last financial year	ID:014	
	Total poor households	ID:013	
KPI 5 –	Drinking Water Quality		
KPI 6 –V	Vastewater Quality		
KPI 7 - 0	Customer Services Standards		
Compor	nent 1 – Service Interruptions		
	Total number of Service interruptions in the last financial year	ID:034	
	Number of interruptions in continuous service to consumers, where interruption for a single incident was greater than 24h	ID:033	
Compor	nent 2 – CRM Systems		
	Does the WSA have a customer Charter	ID:036	
	Does the WSA have a customer service centre	ID:035	
	Is there a system to manage customer queries and log faults	ID:038	
	ID:037		
KPI 8 - I	nstitutional Effectiveness		
Compor	nent 1 - Institutional Effectiveness		
	Completed WSDP is approved by Council for the last financial year?	ID:039	
	Required policies are in place and approved by Council?	ID:040	
	Required bylaws are in place and approved by Council?	ID:041	
	Contracts and Service level agreements in place with all appropriate service delivery role-players (WSPs, internal etc)	ID:042	
	The WSA monitors the KPIs defined by the contract or SLA?	ID:043	
Compor	nent 2 - Water Services Staff Effectiveness		
	Total Water Services staff costs for the last financial year	ID:045	
	Total cost of water and sanitation provision for the last financial year including interest and depreciation (expenditure)	ID:046	
	Total budgeted for water services staff according to the approved organogram for the last financial year	ID:078	
Compor	nent 3 - Grant Funding Effectiveness		
	Total grant funding allocation received for the last financial year	ID:048	
	Total grant funding allocation spent for the last financial year	ID:047	
Compor	nent 4 - WSA Annual Report		
	WSA annual report submitted to Minister	ID:077	
Compor	nent 5 - % Filled Posts on Organogram		
	Total number of posts on Council-approved organogram for the last financial year for water services staff	ID:080	
	Total number of posts filled on the approved water services organogram in the last financial year	ID:079	

KPI 9 - Financial Performance		
Component 1 – Financial Integrity		
Is WSA ring-fenced? (Separate legal entity=3, Separate accounting entity=2, Partially ring-fenced=1, Not ring-fenced at all=0)	ID:049	
Audit report evaluation. (Unqualified=4, Qualified=3, Adverse=2, Disclaimer=1, No report=0)	ID:050	
Component 2 – Average Debtor Days		
Water Services sales income for the last financial year (water/sanitation)	ID:052	
Total outstanding customer/consumer debt for water and sanitation for the last financial year	ID:051	
Component 3 – Revenue Collection Effectiveness		
Water Services sales income for the last financial year (water/sanitation)	ID:052	
Water Services billed income actually received from consumers for last financial year	ID:053	
Component 4 – Average Creditor Days		
Total bulk water purchases for the last financial year	ID:055	
Total bulk water accounts outstanding for the last financial year	ID:054	
Component 5 – Financial Sustainability		
Total water and sanitation income for the last financial year	ID:056	
Total cost of water and sanitation provision for the last financial year including interest and depreciation (expenditure)	ID:046	
Component 6 – Financial Effectiveness		
Total outstanding customer/consumer debt (after provisions) for water and sanitation for the last financial year	ID:051	
Total provision for doubtful debt for water and sanitation for the last financial year	ID:082	
KPI 10 Strategic Asset Management		
Component 1 - Capital Spent on Rehabilitation and Replacement		
Total capital budget (Water and Sanitation) in the last financial year	ID:063	
Total capital spent on refurbishment and replacement in the last financial year	ID:062	
Component 2 – Asset Management Effectiveness		
Asset management plan status	ID:057	
Asset register status	ID:058	
Asset management system is electronic	ID:059	
Component 3 – O&M Expenditure		
Total spent on O&M/Annual maintenance cost (Water and Sanitation) in the last financial year	ID:060	
Replacement value of assets (water services infrastructure)	ID:061	
Component 4 – Replacement Saving		
Depreciation value for the last financial year (Water and Sanitation infrastructure)	ID:065	
Contribution to asset replacement fund for the last financial year. (Water and Sanitation)	ID:064	
Component 5 – Asset Register Monitoring		
Asset register field monitored: Date acquired	ID:066	
Asset register field monitored: Estimated remaining life of asset	ID:068	
Asset register field monitored: Replacement value of asset	ID:070	
Asset register field monitored: Purchase cost of asset	ID:069	
Asset register field monitored: Description of asset (Yes/No)	ID:067	
KPI 11 Water Demand Management		
System input volume (external sources) for the last financial year	ID:121	
System input volume (own sources) for the last financial year	ID:122	
Total billed metered water consumption (volume) for the last financial year	ID:071	
Total billed unmetered water consumption (volume) for the last financial year	ID:074	
Total unbilled metered water consumption (volume) for the last financial year	ID: 073	
Total unbilled unmetered water consumption (volume) for the last financial year	ID: 123	
ADDITIONAL QUESTIONS FOR WATER USE EFFICIENCY		

Water Conservation and Water Demand Management plan		
Installation of water efficient devices		
Repair of leaks		
Measurement or control of water supplied		
Pressure management		
Additional KPI : Tariff Data		
Which of the listed elements are taken into account when you determine your tariff? Indicate from the list provided	ID: 201	
Total amount of subsidies allocated to water for the next financial year	ID: 202	
Total projected cost of water provision for the next financial year	ID: 203	
Does your tariff recognise the difference between levels of service (according to Regulation 4 under s10 of the Water Services Act)?	ID: 204	
Does your tariff recognise the difference between socio-economic status of customers (according to s10 of the Water Services Act)?	ID: 205	
Do you charge a rising block tariff?	ID: 206	
How many blocks are in your tariff structure?	ID: 207	
What is your approved standard tariff? (Basic levy)	ID: 208	
What are the actual 2010/2011 tariffs for the following consumer categories?	ID: 209	
Do you reflect your tariff structure on your bill?	ID: 210	
What are the quantities of water supplied to the following consumer categories (annually)?	ID: 211	
What is the unit number of consumers served with water in each consumer category?	ID: 212	
Do you have a seasonal tariff in your WSA?	ID: 213	
Does your tariff include a fixed charge?	ID: 214	
If a fixed charge is levied, do you subsidise the FBW?	ID: 215	
What other sources of water services revenue (other than tariffs) does your WSA have? Indicate sources on the list provided	ID: 216	
Total annual water services surplus / deficit	ID: 217	



water affairs

Department: Water Affairs REPUBLIC OF SOUTH AFRICA

Department of Water Affairs

Water Demand Management Strategy and Business Plan

for Greater Giyani Local Municipality

May 2013

WCWDM STRATEGY AND BUSINESS PLAN: Signature Page

Title :	Development of a Water Conservation and Water Demand Management Strategy and Business Plan for Greater Giyani Local Municipality					
Authors :	WA Wegelin, Z Siqalaba, N Zondo					
Study Name:	Development of a Reconcilia	tion Strategy for the Luvuvhu	and Letaba Water Supply Syst	em		
Status of Report :	Final draft	Final draft				
Consultants :	WRP Consulting Engineers	(Pty) Ltd				
Approved for Consultants :	Study leader	WA Wegelin, PrEng				
	Position	Name	Signature	Date		
Municipality	Greater Giyani					
Approved for municipality :	Municipal Manager					
	Position	Name	Signature	Date		
Department of Water Affairs	Limpopo Region					
Approved for Regional Office :						
	Position	Name	Signature	Date		
Department of Water Affairs	Head Office					
Approved for Head Office						
	Position	Name	Signature	Date		

WCWDM STRATEGY AND BUSINESS PLAN: Contact details

Province	Limpopo	No
Municipal Code	LIM331	B4
District Municipality	Mopani	
Municipality	Greater Giyani	
Settlements	GIYANI	

Information provided by				
Date 16/03/2012				
Contact person	Lulu Moya			
Position	Water Services Manager			
Telephone	079 512 8462			
E-mail	moyal@greatergiyani.gov.za			

Study team contact						
Company	VRP Consulting Engineers					
Address	PO Box 1522, Brooklyn Sqaure, 0075					
Contact person	Mr Willem Wegelin					
Telephone number	012 346 3496 Cell number 083 4477 999					
E-mail	willemw@wrp.co.za					

Water Affairs contact						
Directorate	/ater Use Efficiency					
Adress	Private Bag X313, Pretoria, 0001					
Contact person	Koena Given Moabelo					
Telephone number	012 336 8174 Cell number 082 653 9216					
E-mail	MoabeloK@dwa.gov.za					

Water Balance Data Confidence Level (see legend below)					
Input volume	Estimated values				
Authorised consumption (Engineering functions)	Estimated values				
Meter reading and billing (Finance functions)	Estimated values				
Legend					
High level of accuracy	Calibrated bulk meters, >98% of consumers are metered < 10 years old, <2% billing complaints				
Medium level of accuracy	Functional bulk meters, >90% of consumers are metered, <10% billing complaints				
Low level of accuracy Some functional bulk meters, >50% consumer meters, any age, meter reading & billing disfunctional					
Estimated values No bulk or consumer meter readings, best estimate of water consumption					
No data	No data and no idea of water consumption				

WCWDM STRATEGY AND BUSINESS PLAN: Executive Summary

Province	Province Limpopo				WSA	No
Municipal Code LIM331					Category	B4
District Municipality Mopani						
Municipality Greater Giyani						
Settlements	Dzumeri, Giyani, N	lkomo, Phalakube	ni			
		Executive	summary			
Status quo						
Very limited WCWDM activities are	undertaken in the	LM and there is li	ttle management i	nformation availat	ble to perform a pr	oper assessment
Most of the towns are informal with	h formal infrastruct	ure in a relatively	smaller area withi	n the LM which er	ables limited meter	ering, billing and
cost recovery in the LM. The curre	ent metering, billing	and cost recover	ry systems are ade	equate however im	provements can b	e made in the
capturing and tracking of monthly	management inform	mation.				
The engineering department in the	Local Municipality	is characterised	by high vacancies	and low capacity	and skills.	d analysis is
required to verify this number. It s	eems there has be	en a drastic decre	ase in the average	e unit consumption	n in the area. The	relationship with
the community is generally conten	tious and the comm	nunities themselv	es are characteris	ed by high unemp	oloyment and a larg	ge indigent
nonulation Stratogy						
The municipality should focus on i	proper record keep	ing analysis and	development of de	etailed manageme	nt information Th	e existence of
bulk meters must be investigated a	as a matter of priori	ity and bulk meter	s must be installe	d should there no	t be any in place.	All vacancies
must be filled as a matter of priorit	y together with skil	lls transfer and ca	pacity building. T	he engineering an	d finance departm	ent must work
closer together at the LM and DM I	evel to improve me	tering, billing and	cost recovery and	d start with a mete	r audit to further i	mprove cost
recovery. A steering committee should be so	at up to report on a	monthly basis to	council on water l	oss figures leaks	renaired targets	nrogress
consumer metering, billing and co	st recovery.	montiny basis to	council on water i	uss ligules, leaks	repaired, targets,	progress,
Proper metering, billing and cost r	ecovery should be	supported by con	nmunity awarenes	s that promotes re	eporting of leaks, f	ixing of private
leaks and efficient use. Based on	the available inform	nation, a target re	duction in NRW of	71.4% down to 48	3.1% and target in	out volume
reduction of 23.3% have been set.	Review the water t	ariff structure to e	ensure it reflects ti	rue cost, promote	WCWDM and worl	k towards
The hudget requirements for the n	ext five vears are s	ummarised in the	table below:			
The budget requirements for the fi	ext live years are st		table below.			
Intervention	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Institutional	475 000	175 000	275 000	175 000	175 000	1 275 000
Financial	12 858 140	12 758 140	12 758 140	12 658 140	12 658 140	63 690 700
Social	6 087 108	5 887 108	5 887 108	5 887 108	5 887 108	29 635 540
Technical	17 317 888	17 055 388	16 705 388	16 642 888	16 627 888	84 349 440
Total	36 738 136	35 875 636	35 625 636	35 363 136	35 348 136	178 950 680
O						
Compliance						
Results from the Regulatory Per	formance ivieasure	ement System (R	PIVIS)			
Key	Performance Indica	ators		Achieved KPI	Required score	Performance
KPI 1: Access to water supply				3.165	3	Adequate
KPI 2: Access to sanitation				3.125	3	Adequate
KPI 3: Access to Free Basic Water				2.689	3	Concern
KPI 4: Access to Free Basic Sanita	tion			0	3	Crisis
KPI 5: Drinking Water Quality man	agement			0	3	Crisis
KPI 6: Wastewater quality manage	KPI 6: Wastewater quality management				3	Concern
KPI 7: Customer service quality				1.75	3	Concern
KPI 8: Institutional effectiveness				3.343	3.5	Concern
KPI 9: Financial performance				2.929	4	Concern
KPI 10: Strategic asset management				4.534	3	Excellent
KPI 11: Water use efficiency				No data	3	No data
Results from Blue and Green Dro	op Assessments		0000	0040	0011	0010
Assessment			2009	2010	2011	2012
Green drop			0.00%	/4.50%	03.8/%	/9.21%
			0.00%	•	01.00%	•

WCWDM STRATEGY AND BUSINESS PLAN: Municipal Water Conservation and Water Demand Management Implementation Process Map

Strategy and Planning Phase Performed by WCWDM Strategy Steering Committee (MEC, Municipal Manager, Technical and Financial Directors) Reviewed by SSC and DWA						Monitoring and Review Performed by Department Reviewed by SSC and QWA
Vision	Mission	Status Quo Technical	Strategy Technical	Business Plan Technical	Implementation All Projects	Deliverables
Water Services Act, 108 of 1997 Provide water services in an efficient, affordable, equitable, economical and sustainable manner to all consumers or potential consumers in its area of	Presidential Target (State of the Nation address 2010) Reduce water Losses by half by 2014	Information on demographics, demands, water loss, level of service Key water loss contributing factors key performance indicators and targets Asset value and condition Departmental organogram	SWOT Analysis : Strenghs, Weaknesses, Opportinuites & Threats of technical department (human resources, processes, Goals and objectives: Achieving water loss reduction target in terms of available resources and non- revenue water. If no target exists, then goal is to develop a target. How : Identify key principles to achieve target (user pay, water restrictions, consumer education, etc) Actions : Responsible person, measurement and timelines to address SWOT analysis	Bulk metering Leakage control and repair Sectorisation and zone metering Logging and water loss monitoring Non domestic and domestic metering and audits Resolve intermittent supply Pressure management Clean out and recommission existing infrastructure Training and capacity building	Council approval of Strategy and Business Plan Identify key stakeholders - setup working committees Appoint PSP Appoint contractor Assess / determine baseline	Record keeping and reporting process Monthly IWA Water Balance calculation for system and DMA No visible leakage Asset management Comply with Regulations R509 of 2001 Responsible WCWDM individual/unit Measurement against goals
jurisdiction.		Economic Tariffs Metering, billing and revenue collection status Existing sources of funding	Economic SWOT Analysis : Strenghs, Weaknesses, Opportinuites and Threats of funding sources Goals and objectives: Allocate sufficient funding to address WCWDM How : identify key principles to obtain funding (improved metering and billing, cost recovery, external funding, etc) Actions : Responsible person, measurement and timelines to address SWOT analysis	Economic Review tariff structure Ensure effective metering and billing system Review CAPEX budget in terms of WDM goals Review OPEX budget in terms of WDM goals Develop business plan for external funding Training and capacity building	Project Quality Control Project Financial Management Establish record keeping and reporting processes Assess benefits from implementation Establish take-over procedure	Economic Sufficient budget allocation Realistic tariff setting Efficient meter reading, billing and cost recovery process Measurement against goals
BIG HAIRY AND AUDACIOUS VISION If it doesn't scare you, its not big enough		Social Customer profile Communication dynamics between WSA and consumers Existing support structures for consumers Level of stakeholder involvement	Social SWOT Analysis : Strenghs, Weaknesses, Opportinuites and Threats of consumers and institution Goals and objectives: Informed and supportive consumer and institution How : identify key principles to develop turn consumers into customers (political, schools, specific consumer groups, water wise, etc) Actions : Responsible person, measurements and timelines to address fWOT analysis	Social Raise awareness at political levels Raise awareness at institutional levels Identify and engage relevant stakeholders Establish customer care centre Training and capacity building Conduct WC/WDM education and awareness Conduct schools awareness campaigns	Training and capacity building	Social Political support Institutional support Informed, involved and supportive consumer Measurement against goals
		Institutional Existence of approved policies Existence of approved bylaws Regulatory compliance Legislasive complicance	timelines to address SWOT analysis Institutional SWOT Analysis : Strenghs, Weaknesses, Opportinuites and Threats of policies, bylaws, political support, enforcement, Regulatory compilance Goals and objectives: Reform organisation to support WCWDM How : identify key principles to obtain improve (improved political support, policies, enforcement, etc) Actions : Responsible person, measurement and	Institutional Establish policies in terms of payment for services, arrears, Establish bylaws that addresses water loss reduction and efficiency Succession planning - ensure inititives continue		Institutional Approved policies Approved bylaws enforcement Regulatory compliance Succession plan Measurement aga

Review and update strategy and business plan . Implement and regulate.

WCWDM STRATEGY : Definitions

Terminology

0,		
Acronym	Description	Link
DWA	Department of Water Affairs	http://www.dwa.gov.za
WS RPMS	Water Services : Regulatory Performance Measurement System	http://www.dwa.gov.za/dir_ws/rpm/
WS NIS	Water Services : National Information System	http://www.dwa.gov.za/dir_ws/wsnis/
FBS	Water Services : Free Basic Water Project	http://www.dwaf.gov.za/dir_ws/fbw/
NRW	Non-revenue water. Volume of water for which no revenue is received (preferred term)	
UAW or UFW	Unaccounted-for water. Volume of water lost due to physical and apparent losses (not preferre	d term)
StatsSA NFC	Statistics South Africa : Non-Financial Census of Municipalities P9115	http://www.statssa.gov.za/

Information sources

ltem	Source	Calculation
Population	DWA WS NIS or municipality	
Households	DWA WS NIS or municipality	
Connections - metered	Extrapolated 2007 DWA - WS FBW serviced above RDP or municipality	
Connections - Unmetered	Extrapolated 2007 DWA - WS FBW serviced at RDP or municipality	
Length of mains (km)	Actual value or calculated at average of 50 connections / km of mains	# connections ÷ 50
(A) System input volume	Total volume of potable water supplied by the municipality in kl/annum	
(B) Billed metered consumption	Total volume of water metered and billed by the municipality in kl/annum	
(C) Billed unmetered consumption	Total volume of water unmetered and billed by the municipality in kl/annum	
Underlined values	Calculated values using trends or averages	

Standard IWA Water Balance

	AUTHORISED CONSUMPTION: 1 + 2 + 3 + 4 Total water used for legitimate purposes 1. Billed metered water 2. Billed un-metered water 3. Unbilled metered water	BILLED METERED: 1. Water is billed for based on a metered consumption (see further explanatory notes). BILLED UN-METERED: 1. Water is billed for based on a flat rate tariff (ie. Not based on a flat rate tariff (ie. Not based on a meter reading) 2. Free basic water used through unbilled un-metered stand pipes or yard connections (see further explanatory notes)	REVENUE WATER: 1+2 1. Billed metered 2. Billed un-metered
SYSTEM INPUT VOLUME: 1 + 2 + 3 1. Total water treated and measured at treatment works outlet	 Unbilled un-metered water 	UNBILLED METERED: 1. Usually very small in RSA, can include government buildings or parks that is metered but not billed.	
 Total water pumped directly from boreholes into reticulation system Total water purchased from bulk water services provider 		 UNBILLED UN-METERED: Estimated water used for legitimate purposes such as fire fighting. Also usage above free basic water for un- metered unbilled standpipe and yard connection usage. (see notes) 	NON REVENUE WATER:
Unaccounted for Water (UAW / UFW)	TOTAL LOSSES: 1 + 2 Total water not used for legitimate purposes 1. Apparent losses 2. Real losses	APPARENT LOSSES: 1+2+3 1. Water used through illegal connections 2. Water used but not billed for because of inaccurate meters 3. Water used but not billed for because of data transfer errors, low estimated readings or any administrative errors. REAL LOSSES: 1. Water that leaks from the system through pipes and connections or overflows from reservoirs	 Unbilled metered Unbilled un-metered Apparent losses Real losses

Apparent Losses

Illegal connections	%	Water Quality	Meter age and accuracy	%	Data transfer	%
Very high	10%	Very poor	> 10 years	10%	Very poor	9%
High	8%	Poor		8%	Poor	7%
Average	6%	Average	5-10 years	6%	Average	5%
Low	4%	Good		4%	Good	3%
Very low	2%	Very good	< 5 years	2%	Very good	1%

WCWDM STRATEGY : Base Information

Mun	Municipality name Greater Giyani				Date of current data	2012	
				Current	Target	Change	
	Demographics	IDP Ref				Ū	
	Population	Par 2.4	No	275 809	275 809	0	
	Urban		No				
	Rural		No	275 809	275 809		
	Households	Par 2.4	No	62 343	62 343	0	
	Urban		No	02 0 10	02 0 10	•	
	Bural		No	62 343	62 343		
	Household density		Pop / HH	4 30	4 42		
	Growth rate: 5 years	Par 4 1 3	<u>%</u>			0	
	Consumer units	Par 3.3	No	189	189	0	
	Residential	1 41 010	No	100			
	Police stations		No	1	1		
	Magistrates Offices		No		0		
	Business		No		0		
	Dry industries		No		0		
	Office buildings		No		0		
	Prisons		No		0		
	Schools		No	159	159		
	Health facilities		No	29	29		
	Wet industries		No	27			
	Mining		No		0		
	Resorts and tourism		No		0		
	Infrastructure		110		0		
	Water Level of Service	Par 3.1	no	39 410	39 410	0	
	Stand pipes		НН	22 516	22 516	0	
	Yard connections		НН	16 894	16 894	0	
	House connections		НН	10 07 1			
	Length of mains (km)	Par 5.1.2	km	334.0	334.0	0	
_	Connections / km of mains		No / km	118.0	118.0	-	
Data	Average system pressure		m	50	30	-20	
nt	Time pressurised		%	70%	100%	0	
Ľ	Sanitation Level of Service	Par 3.2	,.	8 838	8 838	0	
	None water borne		No	1 305	1 305		
	Water borne low flush		No				
	Septic tanks / conservancy		No	311	311		
	Water borne - WTW		No	7 222	7 222		
	Apparent losses		%	17%	17%	0%	
	Consumer meter age		%	6%	6%	0%	
	Illegal connections		%	6%	6%	0%	
	Data transfer		%	5%	5%	0%	
	Water balance data						
	System input volume		k€/annum	18 850 000	17 153 500	-1 696 500	
	Own sources		k€/annum	18 850 000	17 153 500	-1 696 500	
	Other sources		k€/annum			0	
	Billed metered consumption		k€/annum	5 400 000	8 910 000	3 510 000	
	Billed unmetered consumption		k€/annum			0	
	Unbilled metered consumption		k€/annum			0	
	Unbilled unmetered consumption		k€/annum			0	

	Water Tariffe					
	Water family	Den 40.0	Diaman			D 0 00
	Purchase of bulk water	Par 10.2	R/annum			R 0.00
	Total operating cost		R/annum			R 0.00
	Rate - Purchase of bulk water		R/kℓ	#DIV/0!	#DIV/0!	
	Rate - Total operating		R/kℓ	R 0.00	R 0.00	
	Domestic Water Tariffs	Par 10.3				
	0 to	6	k₽/month	R 3 30	R 3 30	B 0 00
	6 to	12	k@/month	P 2 64	P 2 64	B 0.00
		12	KC/IIIOIItli	K 3.04	K 3:04	R 0.00
	12 to	40	Ke/month	R 3.08	R 3.08	R 0.00
	40 to	90	kť/month	R 4.28	R 4.28	R 0.00
	to		k€/month		R 0.00	R 0.00
	> to	90	k€/month	R 5.36	R 5.36	R 0.00
	System input volume		k€/annum	18 850 000	17 153 500	-1 696 500
	Authorised Consumption		kℓ/annum	5 400 000	8 910 000	3 510 000
	Billed authorized		k@/annum	5 400 000	8 910 000	3 510 000
	Dilled authorised		kC/amrum	5 400 000	0 910 000	3 510 000
S	Billed metered		KC/annum	5 400 000	8 910 000	3 510 000
tion	Billed unmetered		k€/annum	0	0	0
sula	Unbilled authorised		k€/annum	0	0	0
Calc	Unbilled metered		k€/annum	0	0	0
e	Unbilled unmetere	d	k€/annum	0	0	0
anc	Water losses		k € /annum	13 450 000	8 243 500	-5 206 500
Bal	Annaront loccoc		k@/annum	2 286 500	1 401 205	-0 200 300
ter	Apparent losses			2 280 500	1 401 393	U
Na	Real losses		Ke/annum	11 163 500	6 842 105	-5 206 500
	UARL		k€/annum	479 574	411 063	0
	Potential real loss	saving	k€/annum	10 683 927	6 431 042	-5 206 500
	Revenue water		k ℓ /annum	5 400 000	8 910 000	3 510 000
	Non-Revenue water		k€/annum	13 450 000	8 243 500	-5 206 500
8	•					
	System input volume unit con					
	litree / conite / dev	Sumption	Plald	407	170	17
	intres / capita / day			187	170	-17
	m ³ / nousenoid / month		m ³ / nn / month	25	23	-2
	m ³ / connection / month		m ³ / conn / month	40	36	-4
	Authorised unit consumption					
	litres / capita / day		ℓ/c/d	54	89	35
	m ³ / household / month		m ³ / hh / month	7	12	5
	m ³ / connection / month		m ³ / conn / month	11	19	8
	Water loss indicators					
	IIARI : Losses / connection	/ day	P / conn / day	33	29	-5
SIO	CARL + Lesses / connection	/ day	e / conn / day	776	476	200
cato	CARL : Losses / connection	/ day	C / Conn / day	116	476	-300
ndi	Infrastructure Leakage Inde	x (ILI)	-	23.28	16.64	-7
e l	Losses / km mains / day		m³ / km / day	91.6	56.1	-35
anc	Non-revenue water		%	71.4%	48.1%	-23.3%
E	Unbilled Consumption		%	0.0%	0.0%	0.0%
erfc	Water Losses		%	71.4%	48.1%	-23.3%
ΥP	Annarent losses		%	12 1%	8 2%	_4 0%
Ae	Pool loccoc		0/_	50 20/	0.2 /0	-+.0/0
	Weter beleves reduction (4.	/0	59.2%	39.9%	-19.3%
	water balance reduction targe	ets				
	System input volume		%		-9.0%	
	Authorised Consumption		%		65.0%	
	Billed authorised		%		65.0%	
	Billed metered		%		65.0%	
	Rilled upmetered		0/		0.0%	
			0/_		0.0%	
			70		0.0%	
	Unbilled metered		%		0.0%	
	Unbilled unmetere	d	%		0.0%	
sis	Average monthly water bill / c	onnection	R / conn / month	R 38	R 67	R 29
haly	Estimated annual income		R / annum	R 17 970 960	R 31 874 808	R 13 903 848
t Ar	Total water supply cost		R / annum	D 0	D 0	D 0
ost	Not profit / loss		D / annum	D 47 070 000	D 24 074 000	E 43 003 040
0	Net pront / 1055		R / annum	K 1/ 9/0 960	r 31 8/4 808	K 13 903 848
	_				•	
	IT second and also and allows		Source	MI/day	m ³ /annum	million m ³ /annum

e an pac	Giyani	Blue Drop 2012	29.99	10 945 620	10.946
ater Source atment Ca	Мариve	Blue Drop 2012	3.50	1 277 500	1.278
	Middle Letaba	Blue Drop 2012	9.00	3 285 000	3.285
N [⊥]	Total		42.49	15 508 120	15.508

	Current IWA Water Balance Diagram (million m ³ /annum)						
	Authorised consumption = 5.400	Billed authorised = 5.400	Billed metered = 5.400	Revenue water = 5.400			
		Apparent losses = 2.287	Apparent losses = 2.287				
System Input Volume = 18.850	Water losses = 13.450	Real Losses = 11.164	Real Losses = 11.164	Non-revenue water = 13.450			

Target IWA Water Balance Diagram (million m ³ /annum)							
System Input Volume = 17.154	Authorised consumption = 8.910	Billed authorised = 8.910	Billed metered = 8.910	Revenue water = 8.910			
		Apparent losses = 1.401	Apparent losses = 1.401				
	Water losses = 8.244	Real Losses = 6.842	Real Losses = 6.842	Non-revenue water = 8.244			
Reduced Input Volume = 1.697							

WCWDM STRATEGY : Water Balance History

Municipality Name Greater Giyani

		Year ending	Jun-05	Jun-06	Jun-07	Jun-08	Jun-09	Jun-10	Jun-11	Jun-12	Jun-18
	Population		252 267	253 926	255 450	257 365	258 910	237 692	251 954	275 809	391 240
	Households		58 318	58 701	59 056	59 495	59 852	54 947	58 244	62 343	88 435
	Connections - met	ered	33 967	34 190	34 395	34 653	34 861	32 004	<u>33 924</u>	<u>35 960</u>	51 010
	Connections - Unme	etered	10 093	10 160	10 221	10 297	10 359	9 510	<u>10 080</u>	<u>10 685</u>	15 157
Data	Length of mains (km)	881	887	892	899	904	830	<u>779</u>	<u>826</u>	1 172
Input	System input volume	kl/annum	11 481 129	15 874 565	20 268 000	18 241 200	17 693 964	18 734 388	19 858 451	18 850 000	17 153 500
	Billed metered consumption	kl/annum	5 830 780	5 615 390	5 400 000	5 615 390	5 543 593	5 519 661	5 559 548	5 540 934	8 910 000
	Billed unmetered	kl/annum	78 696		138 546						
	Unbilled metered	kl/annum									
	Unbilled unmetered	kl/annum									
suo	Revenue water	kl/annum	5 909 476	5 615 390	5 538 546	5 615 390	5 543 593	5 519 661	5 559 548	5 540 934	8 910 000
Ilculati	Non-Revenue water	kl/annum	5 571 653	10 259 175	14 729 454	12 625 810	12 150 371	13 214 727	14 298 903	13 309 066	8 243 500
nce Ca	Water Losses	kl/annum	5 571 653	10 259 175	14 729 454	12 625 810	12 150 371	13 214 727	14 298 903	13 309 066	8 243 500
r Bala	% Non-revenue w	ater	P 48.5%	₱ 64.6%	P 72.7%	₱ 69.2%	陀 68.7%	P 70.5%	P 72.0%	P 70.6%	P 48.1%
Wate	% Water Losse	s	P 48.5%	陀 64.6%	P 72.7%	P 69.2%	陀 68.7%	P 70.5%	P 72.0%	P 70.6%	P 48.1%
ş	Input : Litres / capita	a / day	۴ 125	171 🦻	217	۴ 194	۴ 187	216	۲ 🔑	P 187	P 120
dicator	Input: m³ / household	/ month	۴ 16	23 🖗	92 🏷	۶ 🖗	ح 🏱	28 🏱	28 🏱	25 🎙	۴ 16
nce inc	Billed : Litres / capita	a / day	64 🥐	61 🥐	۶9 🏲	60 🥐	۶9 🏲	۴ 64	60 🥐	۶5 🥐	62 🥐
ormar	Billed : m ³ / household	/ month	8 الح	8 🖗	8 ۴	8 🌱	8 ۴	8 🌱	8 ۴	۴ 7	8 🎙
ey peri	% Population gro	wth		0.66%	0.60%	0.75%	0.60%	-8.20%	6.00%	9.47%	55.28%
Ý	% Water demand g	rowth		38.27%	27.68%	-10.00%	-3.00%	5.88%	6.00%	-5.08%	-13.62%
	Source of information		DWA NIS StatsSA NFC	DWA NIS Estimated	DWA NIS StatsSA NFC	DWA NIS Estimated	DWA NIS StatsSA NFC	DWA NIS Estimated	DWA NIS Estimated	DWA NIS Estimated	Projected



WCWDM STRATEGY : Qualitative Scorecard

	Municipality Name	Greater Giyani				
Introductio						
The purpo	use of this section is to perform a qualitative e	valuation of the municipality's water busine	ss. The objectives are as follows :			
	SWOT Analysis	External - Opportunities Positive external conditions which you don't control which you could take advantage of	External - Threats Negative conditions you don't control but could minimise their effects			
	Internal - Strengths Positive aspects under your control and on which you may wish to capitalise	Strengths and Opportunities (SO) – Strategies that use strengths to maximize opportunities.	Strengths and Threats (ST) – Strategies that use strengths to minimize threats.			
	Internal - Weaknesses Negative aspects under your control (to a large extent) which you could plan to improve	Weaknesses and Opportunities (WO) – Strategies that minimize weaknesses by taking advantage of opportunities.	Weaknesses and Threats (WT) – Strategies that minimize weaknesses and avoid threats.			
ITEM	CATE	GORY	STATUS QUO	SWOT	STRATEGY	PRIORIT
1	INSTITUTIONAL REVIEW					<u> </u>
1.1	Water and Sanitation department structure					
1.1.1	Is there an approved organogram for the Water and Sa	anitation Department?	There is no organogram in place.	W	Develop an appropriate organogram as the WSP and ensure that it caters for WC/WDM personnel.	
1.1.2	What is the vacancy rate in the department and is it a	oroblem?	The municipality has a high vacancy rate of approximately 95%. There are only 3 general workers in the LM and 4 general workers from the district municipality to manage the rest of Greater Givani.	w	Advertise and fill the identified critical vacant posts	
1.1.3	Does the department have the correct technical skills f	or the correct posts.	There is not enough skilled personnel. The department requires artisans and technicians to be able to cover most of the work and the municipality does not have dedicated WDM teams in place.	т	Increase management capacity through new human resources and support it with WC/WDM training.	
1.1.4	Is training and capacity building being done?		No trainings and capacty building is being done.	w	Institute a mandatory training programme for technical staff. Invest in team building and workshop sessions incorporating the councillors and municipal management to boost staff morale.	
1.1.5	Are there sufficient support structures ito vehicles, equ	ipment, materials etc.?	The fleet management is problematic. There are no vehicles and the municipality has only one water tanker to supply 91 villages. Mopani District vehicles are used for maintenance purposes, and only few spares are kept in the stores due to procurement issues	т	Engage with the procurement section from the DM and streamline the procurment process. If necessary, this function should be outsourced.	
1.1.6	Does the municipality own any water loss control equip	oment such as loggers, listening sticks, etc.?	The Municipality does not own any water loss equipment.	0	It is recommended that loggers and simple leak detection equipment be purchased to improve water loss monitoring and management in the system.	
1.2	Municipal support					
1.2.1	Describe the working relationship with other department	nts such as finance, planning, housing etc.?	The relationship with the department of finance has improved over the past two years, but communication with the district needs to be improved.	0	Establish a NRW steering committee comprising representatives from the technical, communications and finance departments to improve communication and access to information	

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
1.2.2	Are the politicians supporting the department?	There is not enough support from the politicians, and they do not fully understand the water business.	Т	Undertake a WC/WDM councillor induction programme to support the councillors with the knowledge to increasingly participate in driving WC/DM in the communities.	1
1.3	Public Private Partnerships				
1.3.1	Is there any major industrial or institutional role player in the area and is there co-operation? (i.e. Mines or industries that impacts heavily on the municipalities existence)	The are no major role players within the municipality.			
1.3.2	If yes, what does the co-operation involve and can it be expanded?	N/A			
1.4	Legislation and bylaws				
1.4.1	Does the municipality have a customer service charter?	There is no customer services charter in place.	0	Implement and publicise the customer service charter to ensure the customers are aware of the municipalities commitment and their responsibilities as consumers.	3
1.4.2	What is the status and age of the existing bylaws and do they address water loss management?	Greater Giyani is using bylaws from the Mopani DM.	S	Engage with the district municipality and periodically review the bylaws and ensure that they incorporate the latest developments in WC/WDM.	3
1.4.3	Are bylaws enforced and if not, why not?	Bylaws are not enforced.	0	Develop partnerships with the credit control and legal departments as well as the SAPS and put appropriate bylaw enforcement mechanisms in place.	2
1.4.4	What is the status and age of Water Services Development Plan?	The municipality has an IDP in place.			
2	FINANCIAL REVIEW				
2.1	Financial Department				
2.1.1	What is your opinion of the Finance Department's ability to perform metering and billing	The finance department appears fairly competent in performing the metering and billing function and the difficulties in accessing information from this department have improved. Previously there was a perceived lack of interest in WC/WDM emanating from the finance however this trend is changing with increased engagement	S	Improve access to the billing information through monthly engagement with the finance department and utilise the effectiveness of the billing system to monitor and track NRW.	1
2.1.2	Is training and capacity building being done?	There is no training given to the finance department.			
2.1.3	What is the state of the municipal metering and billing system?	Metering is fairly good. Approximately 90% of consumers are metered, and billing is being done internally by the finance department.	0	Obtain billed metered consumption from the finance department on a monthly basis and monitor water sales.	1
2.1.4	What is your primary source of funding?	The equitable share, MIG and 5% internal revenue. The other 95% of the internal revenue is transferred to the District Municipality.	0	Focus on improving cost recovery to continuously reduce dependency on grant funding.	2
2.2	Tariffs				
2.2.1	Who prepares the water tariffs and what is it based on?	The department of finance prepares the water tariffs and the technical department makes inputs into the tariff structure.	0	Ensure that the technical department makes inputs into the tariff setting process to ensure that the tariffs are feasible for the municipality and the consumers.	1
2.2.2	What is the tariff structure and does it promote WCWDM?				
2.2.3	Is the water supplied considered affordable by the customers?	The customers don't pay for water, only 50% of the households which are billed are paying out of the 90% of households that are metered.	0	Develop appropriate bylaws specific to Greater Giyani Municipality and ensure that they address WC/WDM issues.	2
2.3	Meter Reading and Billing				

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
2.3.1	Who performs the water meter readings, frequency and accuracy?	Internal Municipal staff does the meter reading.	0	Monitor the customer complaints on a monthly basis and evaluate the effectiveness of the meter readers. Undertake a meter reading and reporting training programme.	2
2.3.2	Are the meter readers trained and can they report leakage when encountered on site?	No training is being given to meter readers but they do report leakage as they walk the streets.		Provide training to meter readers on regular basis.	
2.3.3	Is the water bill understandable and informative?	The water bill is understandable but it can still improve.	т	Consider including water conservation tips and information in the water bill. It is also recommended to display 6 months graphical consumption data on the bill to aid consumers in effectively monitoring water use.	3
2.4	Credit control				
2.4.1	Is credit control being implemented and by whom?	It is implemented by the finance department	0	Focus on improving the relationship with the councillors and the community and ensure that the areas that are not yet metered are metered and billed to increase revenue water.	3
2.4.2	What is the current level of non-payment?	The level of non payment is high and is at approximately 50% cuurently.	0	Focus on promoting payment for services in the township areas through the councillors and education and awareness.	1
3	SOCIAL REVIEW				
3.1	Customer profile			-	
3.1.1	Describe the general consumer profile i.e. Income levels, indigence, unemployment, literacy	The majority of the municipality is rural and the level of unemployment is very high. Certain areas have seasonal workers and as a result, there are high levels of vandalism at pump stations. Brass fittings are often stolen and the borholes are also targeted for vandalism.	0	Focus on educating the indigent population on efficient water use and the importance of the free basic allocation as well as its limitations. Furthermore, ensure that the issues of vandalism and theft are addressed through the community awareness campaign by forming partnerships with the community	1
3.1.2	Describe the relationship between customers and the municipality and reasons?	The relationship with consumers is not very good because sometimes the municipality is running the system at intermittent supply, and there are no vehicles to attend to emergency situations.	т	Engage with the consumers through the councillors and tribal authorities and gain their support and cooperation whilst the municipality resolves the water services challenges. Build on the relationship with all the consumers and strengthen it through community awareness campaions.	1
3.2	Customer awareness				
3.2.1	Are consumers informed regarding the value of water?	The are no programmes in place to promote water efficiency.	0	Budget and undertake a continuous annual education and awareness campaign focusing on promoting water use efficiency and fostering an understanding of the value of water.	2
3.2.2	What is the level of leakage reporting by the community and what method do they use?	Consumers call Lulu Moya if they encounter leaks or pipe burst or call the office for any other enquiries.	0	Ensure that the customer care line is continuously publicised once established to further encourage reporting of leakage.	3
3.2.3	What are the most prominent consumer behavioural challenges encountered by the municipality?	There are high levels of vandalism on boreholes and pumps.	т	The community awareness campaign should be tailored to address these problems. The councillors should be encouraged to make these issues an agenda at all public metering held in the different wards.	2
3.2.4	Is xeriscaped gardening and rain water harvesting encouraged?	Rain water harvesting is currently not being promoted.	0	As part of a community awareness campaign, encourage consumers to harvest rain water and utilise it for garden irrigation and cleaning to reduce the demand for potable water and to undertake xeriscape gardening where practicable	2

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
3.2.5	Are radio campaigns, bill board, pamphlets, informative billing used to inform and educate customers?	No.	0	Develop simple visual material in the form of pamphlets which can be used to educate consumers on efficient water use. Build on the media campaign undertaken and periodically publicise water tips on local radio stations and newspapers.	2
3.3	Schools awareness				
3.3.1	Number of primary and secondary schools?				
3.3.2	Frequency and scope of schools awareness campaigns?				
3.3.3	Are goals and objectives monitored and controlled?				
3.4	Customer Care Centre				
3.4.1	Does the municipality have a CCC and who operates it?	No customer care centre in place.	0	Obtain a trained individual to receive and refer customer complaints and establish a customer care land line. Publicise the call centre and encourage the consumers to become the eyes and ears of the municipality and to report water and sanitation related nrohems.	2
3.4.2	How and to whom are billing queries referred?	Queries are referred to the finance department.	0	Obtain an appropriate electronic job card system to improve the monitoring and tracking of the customer complaints.	2
3.4.3	To whom are the leak reports referred and do consumers have confidence in the reporting system?	Leaks are reported to the water services manager and sometimes reported to the District Municipality.	0	Make one number available for the reporting of leaks within the LM to expedite the efficiency of leak repair. Publicise the number and capture all leaks reports electornically.	2

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
4	TECHNICAL REVIEW				
4.1	Measurement and control				
4.1.1	Is the system input volume measured, monitored and controlled?	Uncertain.	w	Investigate the existence of bulk meters and install them as a matter of priority if they are not in place. Read all bulk meters on a monthly basis to monitor input volumes and capture the information on a spreadsheet which should also be updated monthly.	1
4.1.2	Is the water supply system sectorised into zones and districts?	No sectorisation has taken place.	0	Sectorise the areas where practicable into manageable discrete zones to aid effective monitoring of the network.	2
4.1.3	Are the supply to the zones and districts metered?	No.	Т	Install zone meters and read on a monthly basis and capture the readings on a spreadsheet.	2
4.1.4	Is the system monitored through a telemetry system?	Most of the reservoirs are monitored by Mopani DM.	0	Obtain an appropriate real time telemetry system for all reservoirs manages by Greater Giyani to improve the monitoring of the network.	2
4.1.5	What is the Frequency and detail of your water balance calculation?	There are no water balance calculations being undertaken.	w	Develop an NRW water balance which must be updated on a monthly basis to monitor water losses.	1
4.1.6	Are minimum night flows, consumption trends and logging used to monitor the system?	There is no night flow analysis being undertaken.	0	Consider installing pressure and flow loggers at the zone meters once they have been installed to monitor MNF, which will assist to determine the levels of leakage and wastage in each zone and to identify areas where pressure management can take place.	3
4.1.7	Are monthly management reports prepared and key performance indicators measured?	There are no monthly management reports being generated.	0	Consolidate the available data from the water treatment works (capacity of treatment works) and department of finance and compile a monthly NRW report with the relevant KPI's.	1
4.2	Physical leakage				
4.2.1	What is the average age of the network, pipe material, replacement programme?	The pipes are approximately 40 Years old. 40% of them AC pipes and the rest is plastic pipes.	т	Set aside 5% of the CAPEX budget for the replacement of the network.	1
4.2.2	Number of burst pipes reported and repaired per week / month and the average response time?	About 3 pipe busts per month on avarage.	w	Undertake an infrastructure refurbishment programme. Also consider pressure management where practicable to reduce the number of pipe bursts and leakage.	2
4.2.3	What is the primary cause of burst pipes?	Mainly the age of network and trees growing over the pipes.	Т	Allocate a proper budget for replacement and refurbishment. Budget a minimum of 5% of the infrastructure value for this purpose to reduce the risk of system failure. Also consider implementing pressure management in areas with high burst frequencies.	1
4.2.4	Are active leak detection programmes conducted?	Leak detection is conducted on a reactive basis only.	0	Undertake active leak detection on the network on an annual basis. Select appropriate areas for the leak detection exercise based on the district meter readings once sectorisation has taken place. This can be done through the meter readers.	2
4.2.5	How often and for how long do reservoirs overflow?	Mopani DM monitors the reservoirs.	0	Install a real time telemetry system to monitor activity at the reservoirs.	2
4.2.6	Are water losses from treatment processes (backwash, etc.) monitored and minimised?				1

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
4.2.7	Is leakage on private properties a problem and if so, why?	Leakage in private properties is problematic due to lack of willingness from consumers to fix the leakage and no community awareness campaigns are undertaken to save water.	т	Undertake an internal leak audit in critical areas to accurately determine the extent of water losses and do a cost benefit analysis to assess the merit of periodically performing leak repairs for indigent consumers.	2
4.2.8	Are leaks on indigent private properties repaired and removal of wasteful devices encouraged?	There are approximately 6000 indigent households and they pay R270 for a water connection and R200 for a reconnection. There is no programme in place to fix leaks in the indigent properties.	0	Review the existing indigent policy and consider undertaking an internal leak audit and repair exercise for indigent and non paying consumers to drastically reduce the NRW.	3
4.3	Pressure management and control valves	P. 1 P. 1			
4.3.1	What is the average and maximum system pressure?	Uncertain.			
4.3.2	Is basic or advanced pressure management being implemented?	No pressure management is being implemented.	0	Identify critical areas experiencing a high frequency of pipe bursts and pressure and install pressure reducing valves.	3
4.3.3	Are control valves pro-actively being maintained to prevent overflowing reservoirs?	No	w	Existing control valves must be maintained or recommissioned to assist in the monitoring of reservoirs.	1
4.4	Consumer metering				
4.4.1	Are domestic and non-domestic consumers metered and which type of meter is used?	All non domestic consumers are metered with kent meters especially around the Giyani town, and in the townships. There are car washes that are given a letter to convert the stand from domestic to commercial stands and if no co-operation is obtained: the municipality cuts the supply.	0	Meter and bill 100% of non domestic connections as a priority and increasingly meter and bill the domestic consumers where practicable to increase revenue water.	1
4.4.2	What is the condition, age and accuracy of water meters?	Most of the meters are very old and are approximately 8 to 10 years. The replacement is normaly done when the meter is faulty.	w	Allocate a significant budget and implement a meter replacement programme especially for non domestic consumers as a first phase of replacement.	1
4.4.3	Are the top consumers pro-actively monitored on a monthly basis?	All the top consumers in town are monitored on monthly basis.	S	Continue monthly monitoring of top consumers and periodically perform courtesy visits and confirm that all supplies are metered and that the meters are still operational and accurate.	2
4.4.4	Describe the water quality and its impact on consumer water meters?	Water quality is fairly good, even boreholes in the rural communities were tested fit for human consumption.			
4.4.5	What is the prevalence and control of illegal connections?	There is a high prevalence of illegal connections in the rural areas and the farming communities, as well as in certain areas where consumers are opening car washes.	0	Actively monitor illegal connections and periodically undertake an audit on the meters. This can be conducted by the meter readers.	2
4.5	Management information				
4.5.1	Does the Municipality have an asset register and asset management programme?	There is no asset register at the municipality, it is with the Mopani DM offices	т	Complete the asset register and maintain and update the asset register on an annual basis.	2
4.5.2	What is the status and age of as-built drawings?	The as built drawings are very old and are only in hard copy format. There is no co-orperation with the planning department.	w	Develop electronic as built drawings for the whole network.	3

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
Summary					

SWOT Analysis	Helpful	Harmful
Internal factors (Staff, infrastructure, tools, equipment)	Monitoring of top consumers majority of the consumers in the formal areas are metered and billed Good quality potable water	No bulk meter management No sectorisation No pressure management Old dilapidated infrastructure No meter replacement programme in place High vacancies and low levels of skills and capacity
Internal factors (Politics, finance, consumers, economics)	Positive relationship between departments Establish a customer care section Provide training for politicians on WC/WDM Improve the relationship with consumers through education and awareness Coordinate managemnet information and establish monthly NRW reporting	High prevalence of illegal connections and vandalism Low levesl of political support Contentious relationship between the municipality and the community No water conservation education and awareness High levels of internal plumbing leakage Problematic fleet managemnet and procurement processes

WCWDM STRATEGY : Quantitative Scorecard

Municipality Name Greater Giyani

Introduction

The purpose of the Water Conservation / Water Demand Management (WC/WDM) Scorecard is to ascertain the status quo of WC/WDM and evaluate the potential for WC/WDM measures to be implemented in these systems. The scorecard is aslo designed to enable the Regulator (Department of Water Affairs) to assess the current situation regarding losses and levels of wastage in all water supply systems countrywide. The scorecard consists of 25 multiple choice questions with each question getting scored from 0 to 4. The Regulator and WSA can track progress with each year the scorecard gets completed. Each question ends with an audit requirement which indicates what will be required by the Regulator should the questionnaire be audited. It also provides an indication on what is required in terms of each of the measures.

Completed by	PSP		
Date	Feb-12		Average
1. Development of Standard Water Balance	1		1
2. Pressurised supply to all consumers 100% of time	1		1
3. Residential Metering System	3		3
A New Peridential Meters (Commercial Industrial and Institutional)	2		2
	3		3
	-		
5. Effective Billing System & Informative Billing	2		2
6. Network (Leakage) Complaints System	2		2
7. Billing and Metering Complaints System	1		1
8. Asset Register for Water Reticulation System	3		3
9 Asset Management - Canital Works	3		3
	Ŭ		
10. Asset Management - Operations and Maintenance	1		1
11. Dedicated WDM support	1		1
12. Active Leakage Control	1		1
13. Effective Sectorisation	2		2
14. Effective Bulk Meter Management	2		2
15 Effective Zone Mater Management and Night Flow Analysis	1		1
	•		•
	4		
To. Pressure Management and Maintenance of Pressure Reducing Valves	1		1
17. As-Built Drawings of Bulk and Reticulation Infrastructure	2		2
18. Schematic Layout of Water Infrastructure	2		2

Date	Feb-12			Average
19. Regulations and Bylaws	3			3
	-			
20. Tariffs	2			2
21. Technical Support to Customers	2			2
22. Removal of Unlawful Connections	2			2
	-			
23. Community Awareness and Education Programmes	1			1
24. Schools Awareness and Education Programmes	0			0
25. Newspaper & radio articles plus posters and leaflets for distribution	0			0
Total score (maximum 100)		0	0	42



WCWDM STRATEGY AND BUSINESS PLAN : BUDGET AND CASHFLOW

Municipality name Greater Giyani

COSTS										
	Item	Unit	Quantity / year	Rate	Year 1	Year 2	Year 3	Year 4	Year 5	Total
INSTITUTION	AL / LEGISLATIVE INTERVENTIONS									
Institutional re	eview:				100%					100%
CAPEX	Review organogram and fill vacancies	Sum	1	R 200 000	R 200 000	R 0	R 0	R 0	R 0	R 200 000
OPEX		Sum			R 0	R 0	R 0	R 0	R 0	R 0
Training and e	education :				50%	25%	25%			100%
CAPEX	Not applicable	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Assume one training course / employee / annum	No	15	R 5 000	R 75 000	R 75 000	R 75 000	R 75 000	R 75 000	R 375 000
Customer cha	arter, policy, bylaws :				50%		50%			100%
CAPEX	Review bylaws on 5 year cycles	Sum	1	R 200 000	R 100 000	R 0	R 100 000	R 0	R 0	R 200 000
OPEX	Enforce bylaws	Sum	1	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 500 000
FINANCIAL I	NTERVENTIONS									
Effective meter	ering and billing :				50%	50%				100%
CAPEX	Perform meter audit	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Ensure proper metering and billing of all consumers	No	57 537	R 100	R 5 753 700	R 28 768 500				
Water tariffs :			+		50%		50%			100%
CAPEX	Review water tariffs	Sum	1	R 200 000	R 100 000	R 0	R 100 000	R 0	R 0	R 200 000
OPEX	Not applicable	Sum		R 0	R 0	R 0	R 0	R 0	R 0	R 0
Informative bi	illing :				50%	50%				100%
CAPEX	Improve invoice to show monthly consumption	Sum	1	R 200 000	R 100 000	R 100 000	R 0	R 0	R 0	R 200 000
OPEX	Distribute information with bill	Sum	57 537	R 120	R 6 904 440	R 34 522 200				
SOCIAL INTE	ERVENTIONS									
Consumer A	wareness Campaign :				20%	20%	20%	20%	20%	100%
CAPEX	Install bill boards, design pamphlets, radio campaigns	Sum	57 537	R 120	R 1 380 888	R 6 904 440				
OPEX	Target households on monthly basis with awareness cam	No	57 537	R 60	R 3 452 220	R 17 261 100				
Consumer H	elp and Support Desk :				100%					100%
CAPEX	Improve existing help-desk to provide one-stop service	Sum	1	R 200 000	R 200 000	R 0	R 0	R 0	R 0	R 200 000
OPEX	Maintain help-desk	Sum	1	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 500 000
Schools awa	ireness :				20%	20%	20%	20%	20%	100%
CAPEX	Prepare schools competition, awareness, retrofit	No	159	R 20 000	R 636 000	R 636 000	R 636 000	R 636 000	R 636 000	R 3 180 000
OPEX	Monthly schools awareness campaign	No	159	R 2 000	R 318 000	R 1 590 000				

TECHNICAL II	NTERVENTIONS									
Bulk metering	1:				50%	50%				100%
CAPEX	New meter installations required	No	0	R 50 000	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Maintenance of existing bulk meters	No	5	R 1 000	R 5 000	R 5 000	R 5 000	R 5 000	R 5 000	R 25 000
Sectorisation	:		· · ·	·	50%	25%	25%		·	100%
CAPEX	Setup of new DMA / PMAs	No	5	R 50 000	R 125 000	R 62 500	R 62 500	R 0	R 0	R 250 000
OPEX	Maintenance of DMA / PMAs including step testing	No	5	R 25 000	R 125 000	R 125 000	R 125 000	R 125 000	R 125 000	R 625 000
Active Leakag	je Control :				50%	25%	25%			100%
CAPEX	Not applicable	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Fix all visible and reported leaks	No	334	R 1 000	R 334 000	R 1 670 000				
Valve audits			· · ·	·	20%	20%	20%	20%	20%	100%
CAPEX	Locate, clean, repair, document network valves	No	1 336	R 4 000	R 1 068 800	R 5 344 000				
OPEX	Maintain network valves	No	267	R 1 000	R 267 200	R 1 336 000				
Leak and logg	jing equipment :		· · ·	·	25%	25%	25%	25%	·	100%
CAPEX	Procure basic WDM equipment	Sum	3	R 20 000	R 15 000	R 15 000	R 15 000	R 15 000	R 0	R 60 000
OPEX	Not applicable	Sum			R 0	R 0	R 0	R 0	R 0	R 0
Telemetry :					50%	50%				100%
CAPEX	Install telemetry sites	No	5	R 15 000	R 37 500	R 37 500	R 0	R 0	R 0	R 75 000
OPEX	Maintain telemetry sites	No	5	R 1 500	R 7 500	R 7 500	R 7 500	R 7 500	R 7 500	R 37 500
Retrofitting an	nd removal of wasteful devices :				20%	20%	20%	20%	20%	100%
CAPEX	Retrofit government buildings, schools, etc.	No	11 507	R 1 000	R 2 301 480	R 11 507 400				
OPEX	Not applicable	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
Mains replace	ement :				20%	20%	20%	20%	20%	100%
CAPEX	Replace critical leaking mains	km	6.7	R 100 000	R 133 600	R 668 000				
OPEX	Not applicable	km		R 0	R 0	R 0	R 0	R 0	R 0	R 0
Pressure man	agement :				50%	50%				100%
CAPEX	New pressure management installations	No	3	R 75 000	R 112 500	R 112 500	R 0	R 0	R 0	R 225 000
OPEX	Maintain pressure management installations	No	3	R 5 000	R 15 000	R 15 000	R 15 000	R 15 000	R 15 000	R 75 000
Control valve	management :				50%	50%				100%
CAPEX	New control valve installations	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Maintain all control valve installations	No	5	R 5 000	R 25 000	R 25 000	R 25 000	R 25 000	R 25 000	R 125 000
Consumer me	etering :				20%	20%	20%	20%	20%	100%
CAPEX	Replacement of old water meters	No	5 754	R 1 200	R 1 380 888	R 6 904 440				
OPEX	Replacement of broken and cycled water meters	No	2 877	R 1 200	R 3 452 220	R 17 261 100				
Top consume	r audit :				20%	20%	20%	20%	20%	100%
CAPEX	Audit and retrofit non domestic consumers	No	2 877	R 10 000	R 5 753 700	R 28 768 500				
OPEX	Maintain non domestic consumers installations	No	2 877	R 500	R 1 438 500	R 1 438 500	R 1 438 500	R 1 438 500	R 1 438 500	R 7 192 500
GIS / CAD sys	stem :	-			50%	50%				100%
CAPEX	Setup CAD/ GIS system	Sum	1	R 200 000	R 100 000	R 100 000	R 0	R 0	R 0	R 200 000
OPEX	Maintain CAD / GIS system	Sum	1	R 200 000	R 200 000	R 200 000	R 200 000	R 200 000	R 200 000	R 1 000 000
Management	Information System :				50%	50%				100%

CAPEX	Setup basic MIS system to support WDM	Sum	1	R 200 000	R 100 000	R 100 000	R 0	R 0	R 0	R 200 000
OPEX	Maintain MIS system	Sum	1	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 500 000
Water loss m	nonitoring and audits:	•			100%	·	•			100%
CAPEX	Perform proper analysis of distribution network	Sum	1	R 200 000	R 200 000	R 0	R 0	R 0	R 0	R 200 000
OPEX	Perform ad hoc analysis to monitor interventions	Sum	1	R 20 000	R 20 000	R 20 000	R 20 000	R 20 000	R 20 000	R 100 000
	ltem	Туре			Year 1	Year 2	Year 3	Year 4	Year 5	Total
TOTAL COST	ſS									
Institutional		CAPEX			R 300 000	R 0	R 100 000	R 0	R 0	R 400 000
		OPEX			R 175 000	R 875 000				
		TOTAL			R 475 000	R 175 000	R 275 000	R 175 000	R 175 000	R 1 275 000
Financial		CAPEX			R 200 000	R 100 000	R 100 000	R 0	R 0	R 400 000
-		OPEX			R 12 658 140	R 63 290 700				
-		TOTAL			R 12 858 140	R 12 758 140	R 12 758 140	R 12 658 140	R 12 658 140	R 63 690 700
Social		CAPEX			R 2 216 888	R 2 016 888	R 10 284 440			
		OPEX			R 3 870 220	R 19 351 100				
		TOTAL			R 6 087 108	R 5 887 108	R 29 635 540			
Technical		CAPEX			R 11 328 468	R 11 065 968	R 10 715 968	R 10 653 468	R 10 638 468	R 54 402 340
		OPEX			R 5 989 420	R 29 947 100				
		TOTAL			R 17 317 888	R 17 055 388	R 16 705 388	R 16 642 888	R 16 627 888	R 84 349 440
Total		CAPEX			R 14 045 356	R 13 182 856	R 12 932 856	R 12 670 356	R 12 655 356	R 65 486 780
		OPEX			R 22 692 780	R 22 692 /80	R 22 692 780	R 22 692 780	R 22 692 780	R 113 463 900
		TOTAL			R 36 738 136	R 35 875 636	R 35 625 636	R 35 363 136	R 35 348 136	R 178 950 680
					R 36 /38 136	R 35 875 636	R 35 625 636	R 35 363 136	R 35 348 136	
BENEFIIS										
	Item	Unit			Year 1	Year 2	Year 3	Year 4	Year 5	Total
CHANGE IN (CONSUMPTION									
Reduced inpu	it volume	2			20%	40%	60%	80%	100%	300%
Volume		m³/annum	1 696 500		339 300	678 600	1 017 900	1 357 200	1 696 500	5 089 500
Amount		R / annum	1 696 500	R 3.50	R 1 187 550	R 2 375 100	R 3 562 650	R 4 750 200	R 5 937 750	R 17 813 250
Increased rev	enue water	2	1		20%	40%	60%	80%	100%	300%
Volume		m³/annum	3 510 000		702 000	1 404 000	2 106 000	2 808 000	3 510 000	10 530 000
Amount		R / annum	3 510 000	R 7.00	R 4 914 000	R 9 828 000	R 14 742 000	R 19 656 000	R 24 570 000	R 73 710 000
			1		-				B a a a a a a a a b a b b b b b b b b b b	
Total		R / annum			R 6 101 550	R 12 203 100	R 18 304 650	R 24 406 200	R 30 507 750	R 91 523 250

Payback period - years 2.0

WC/WDM Projection summary and targets

Municipality name Greater Giyani

Water Demand projection	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 5.0% WDM Scenario							19.69	19.72	19.75	19.78	19.81	19.83
Less 7.5% WDM Scenario							19.61	19.56	19.50	19.44	19.37	19.31
Less 10.0% WDM Scenario							19.53	19.39	19.25	19.10	18.94	18.79
Actual Demand	11.48	15.87	20.27	18.24	17.69	18.73	19.86					
High population No WDM							19.86	20.06	20.26	20.46	20.67	20.87
Current yield	18.85	18.85	18.85	18.85	18.85	18.85	18.85	18.85	18.85	18.85	18.85	18.85

Savings	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 5.0% WDM Scenario							0.17	0.33	0.51	0.68	0.86	1.04
Less 7.5% WDM Scenario							0.25	0.50	0.76	1.02	1.29	1.57
Less 10.0% WDM Scenario							0.33	0.67	1.01	1.36	1.72	2.09
Actual savings							0.00					

% Reduction	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 5.0% WDM Scenario							0.83%	1.67%	2.50%	3.33%	4.17%	5.00%
Less 7.5% WDM Scenario							1.25%	2.50%	3.75%	5.00%	6.25%	7.50%
Less 10.0% WDM Scenario							1.67%	3.33%	5.00%	6.67%	8.33%	10.00%

Year / Year % Growth	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 5.0% WDM Scenario								0.2%	0.1%	0.1%	0.3%	0.3%
Less 7.5% WDM Scenario								-0.3%	-0.3%	-0.3%	-0.6%	-0.7%
Less 10.0% WDM Scenario								-0.7%	-0.7%	-0.8%	-1.6%	-1.6%
Actual Demand		38.3%	27.7%	-10.0%	-3.0%	5.9%	6.0%					
High population No WDM								1.0%	1.0%	1.0%	1.0%	1.0%

Key Performance Indicators	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Population (DWA, NIS)	252 267	253 926	255 450	257 365	258 910	237 692	251 954					
Households (DWA, NIS)	58 318	58 701	59 056	59 495	59 852	54 947	58 244					
l/c/d	125	171	217	194	187	216	216					
m3/hh/month	16	23	29	26	25	28	28					
Demand MI/day	31	43	56	50	48	51	54					





WCWDM STRATEGY : RPMS Compliance

Municipality name Greater Giyani

Key questions from the Regulatory Performance Measurement System (RPMS) related to WC/WDM

KPI		ID	WSA Value
KPI 1 – .	Access to Water		
KPI 2 – /	Access to Sanitation		
KPI 3 – .	Access to Free Basic Water		
	Total poor households receiving Free Basic Water for last financial year	ID:012	
	Total poor households	ID:013	
KPI 4 – .	Access to Free Basic Sanitation		
	Total poor households receiving Free Basic Sanitation for last financial year	ID:014	
	Total poor households	ID:013	
KPI 5 –	Drinking Water Quality		
KPI 6 –V	Vastewater Quality		
KPI 7 - 0	Customer Services Standards		
Compor	nent 1 – Service Interruptions		
	Total number of Service interruptions in the last financial year	ID:034	
	Number of interruptions in continuous service to consumers, where interruption for a single incident was greater than 24h	ID:033	
Compor	nent 2 – CRM Systems		
	Does the WSA have a customer Charter	ID:036	
	Does the WSA have a customer service centre	ID:035	
	Is there a system to manage customer queries and log faults	ID:038	
	Does the incident tracking system escalate complaints if not responded to within a prescribed time?	ID:037	
KPI 8 - I	nstitutional Effectiveness		
Compor	nent 1 - Institutional Effectiveness		
	Completed WSDP is approved by Council for the last financial year?	ID:039	
	Required policies are in place and approved by Council?	ID:040	
	Required bylaws are in place and approved by Council?	ID:041	
	Contracts and Service level agreements in place with all appropriate service delivery role-players (WSPs, internal etc)	ID:042	
	The WSA monitors the KPIs defined by the contract or SLA?	ID:043	
Compor	nent 2 - Water Services Staff Effectiveness		
	Total Water Services staff costs for the last financial year	ID:045	
	Total cost of water and sanitation provision for the last financial year including interest and depreciation (expenditure)	ID:046	
	Total budgeted for water services staff according to the approved organogram for the last financial year	ID:078	
Compor	nent 3 - Grant Funding Effectiveness		
	Total grant funding allocation received for the last financial year	ID:048	
	Total grant funding allocation spent for the last financial year	ID:047	
Compor	nent 4 - WSA Annual Report		
	WSA annual report submitted to Minister	ID:077	
Compor	nent 5 - % Filled Posts on Organogram		
	Total number of posts on Council-approved organogram for the last financial year for water services staff	ID:080	
	Total number of posts filled on the approved water services organogram in the last financial year	ID:079	

KPI 9 - Financial Performance		
Component 1 – Financial Integrity		
Is WSA ring-fenced? (Separate legal entity=3, Separate accounting entity=2, Partially ring-fenced=1, Not ring-fenced at all=0)	ID:049	
Audit report evaluation. (Unqualified=4, Qualified=3, Adverse=2, Disclaimer=1, No report=0)	ID:050	
Component 2 – Average Debtor Days		
Water Services sales income for the last financial year (water/sanitation)	ID:052	
Total outstanding customer/consumer debt for water and sanitation for the last financial year	ID:051	
Component 3 – Revenue Collection Effectiveness		
Water Services sales income for the last financial year (water/sanitation)	ID:052	
Water Services billed income actually received from consumers for last financial year	ID:053	
Component 4 – Average Creditor Days		
Total bulk water purchases for the last financial year	ID:055	
Total bulk water accounts outstanding for the last financial year	ID:054	
Component 5 – Financial Sustainability		
Total water and sanitation income for the last financial year	ID:056	
Total cost of water and sanitation provision for the last financial year including interest and depreciation (expenditure)	ID:046	
Component 6 – Financial Effectiveness		
Total outstanding customer/consumer debt (after provisions) for water and sanitation for the last financial year	ID:051	
Total provision for doubtful debt for water and sanitation for the last financial year	ID:082	
KPI 10 Strategic Asset Management		
Component 1 - Capital Spent on Rehabilitation and Replacement		
Total capital budget (Water and Sanitation) in the last financial year	ID:063	
Total capital spent on refurbishment and replacement in the last financial year	ID:062	
Component 2 – Asset Management Effectiveness		
Asset management plan status	ID:057	
Asset register status	ID:058	
Asset management system is electronic	ID:059	
Component 3 – O&M Expenditure		
Total spent on O&M/Annual maintenance cost (Water and Sanitation) in the last financial year	ID:060	
Replacement value of assets (water services infrastructure)	ID:061	
Component 4 – Replacement Saving		
Depreciation value for the last financial year (Water and Sanitation infrastructure)	ID:065	
Contribution to asset replacement fund for the last financial year. (Water and Sanitation)	ID:064	
Component 5 – Asset Register Monitoring		
Asset register field monitored: Date acquired	ID:066	
Asset register field monitored: Estimated remaining life of asset	ID:068	
Asset register field monitored: Replacement value of asset	ID:070	
Asset register field monitored: Purchase cost of asset	ID:069	
Asset register field monitored: Description of asset (Yes/No)	ID:067	
KPI 11 Water Demand Management		
System input volume (external sources) for the last financial year	ID:121	
System input volume (own sources) for the last financial year	ID:122	
Total billed metered water consumption (volume) for the last financial year	ID:071	
Total billed unmetered water consumption (volume) for the last financial year	ID:074	
Total unbilled metered water consumption (volume) for the last financial year	ID: 073	
Total unbilled unmetered water consumption (volume) for the last financial year	ID: 123	
ADDITIONAL QUESTIONS FOR WATER USE EFFICIENCY		

Water Conservation and Water Demand Management plan		
Installation of water efficient devices		
Repair of leaks		
Measurement or control of water supplied		
Pressure management		
Additional KPI : Tariff Data		
Which of the listed elements are taken into account when you determine your tariff? Indicate from the list provided	ID: 201	
Total amount of subsidies allocated to water for the next financial year	ID: 202	
Total projected cost of water provision for the next financial year	ID: 203	
Does your tariff recognise the difference between levels of service (according to Regulation 4 under s10 of the Water Services Act)?	ID: 204	
Does your tariff recognise the difference between socio-economic status of customers (according to s10 of the Water Services Act)?	ID: 205	
Do you charge a rising block tariff?	ID: 206	
How many blocks are in your tariff structure?	ID: 207	
What is your approved standard tariff? (Basic levy)	ID: 208	
What are the actual 2010/2011 tariffs for the following consumer categories?	ID: 209	
Do you reflect your tariff structure on your bill?	ID: 210	
What are the quantities of water supplied to the following consumer categories (annually)?	ID: 211	
What is the unit number of consumers served with water in each consumer category?	ID: 212	
Do you have a seasonal tariff in your WSA?	ID: 213	
Does your tariff include a fixed charge?	ID: 214	
If a fixed charge is levied, do you subsidise the FBW?	ID: 215	
What other sources of water services revenue (other than tariffs) does your WSA have? Indicate sources on the list provided	ID: 216	
Total annual water services surplus / deficit	ID: 217	



water affairs

Department: Water Affairs REPUBLIC OF SOUTH AFRICA

Department of Water Affairs

Water Demand Management Strategy and Business Plan

for Greater Letaba Local Municipality

May 2013

WCWDM STRATEGY AND BUSINESS PLAN: Signature Page

Title :	Development of a Water Conservation and Water Demand Management Strategy and Business Plan for Greater Letaba Local Municipality						
Authors :	WA Wegelin, Z Siqalaba, N Z	/A Wegelin, Z Siqalaba, N Zondo					
Study Name:	Development of a Reconcilia	tion Strategy for the Luvuvhu	and Letaba Water Supply Syst	em			
Status of Report :	Final draft						
Consultants :	WRP Consulting Engineers	(Pty) Ltd					
Approved for Consultants :	Study leader	WA Wegelin, PrEng					
	Position	Name	Signature	Date			
Municipality	Greater Letaba						
Approved for municipality :	Municipal Manager						
	Position	Name	Signature	Date			
Department of Water Affairs	Limpopo Region						
Approved for Regional Office :							
	Position	Name	Signature	Date			
Department of Water Affairs	Head Office						
Approved for Head Office							
	Position	Name	Signature	Date			

WCWDM STRATEGY AND BUSINESS PLAN: Contact details

Province	Limpopo	WSA	No				
Municipal Code	LIM332	Category	B4				
District Municipality	Mopani	<i>I</i> opani					
Municipality	Greater Letaba	ireater Letaba					
Settlements	Duiwelskloof, Ga-Kgapane, Ga- Modjadji, Hildreth Ridge, Mamaila,	welskloof, Ga-Kgapane, Ga- Modjadji, Hildreth Ridge, Mamaila, Modjadjis Kloof, Mooketsi					

Information provided by	
Date	
Contact person	
Position	
Telephone	
E-mail	

Study team contact						
Company	WRP Consulting Engineers	RP Consulting Engineers				
Address	O Box 1522, Brooklyn Square, 0075					
Contact person	Mr Willem Wegelin					
Telephone number	012 346 3496	Cell number	083 4477 999			
E-mail	willemw@wrp.co.za					

Nater Affairs contact						
Directorate	Water Use Efficiency	ter Use Efficiency				
Address	rivate Bag X313, Pretoria, 0001					
Contact person	Koena Given Moabelo					
Telephone number	012 336 8174	Cell number	082 653 9216			
E-mail	MoabeloK@dwa.gov.za					

Nater Balance Data Confidence Level (see legend below)					
Input volume	Estimated values				
Authorised consumption (Engineering functions)	Estimated values				
Meter reading and billing (Finance functions)	Estimated values				
Legend					
High level of accuracy	Calibrated bulk meters, >98% of consumers are metered < 10 years old, <2% billing complaints				
Medium level of accuracy	Functional bulk meters, >90% of consumers are metered, <10% billing complaints				
Low level of accuracy	Some functional bulk meters, >50% consumer meters, any age, meter reading & billing dysfunctional				
Estimated values	No bulk or consumer meter readings, best estimate of water consumption				
No data	No data and no idea of water consumption				
F

WCWDM STRATEGY AND BUSINESS PLAN: Executive Summary

Province	Limpopo				WSA	No					
Municipal Code	LIM332	IM332 Category B4									
District Municipality	Mopani										
Municipality	Greater Letaba										
Settlements	Settlements Duiwelskloof, Ga-Kgapane, Ga- Modjadji, Hildreth Ridge, Mamaila, Modjadjis Kloof, Mooketsi										
Executive summary											
Status quo											
Limited WCWDM activities are und	ertaken in the LM bu	It there is signifie	cant management	information availa	ble to perform a ru	udimentary					
Assessment of the water losses and potential savings. The assessment is in line with RPMS, Blue Drop assessments, IDP and the WSDP. Most of the areas are informal with informal infrastructure in a significantly large area within the LM which enables limited scope for metering, billing and cost recovery in the LM. The current metering, billing and cost recovery systems are inadequate. The engineering departments in the Local Municipalities are characterised by high vacancies and limited capacity and skills. The current estimated unit consumption of 136 I/c/d is already low and the system is characterised by intermittent supply. The relationship with the community is generally positive and the communities themselves are characterised by a relatively high indigent population. The water tariffs are not cost reflective however, the consumers are not cognisant of water conservation practices.											
Strategy The municipality should focus on proper record keeping, analysis and development of detailed management information. All vacancies must be filled as a matter of priority together with skills transfer and capacity building. The engineering and finance department must work closer together to improve metering, billing and cost recovery and start with a meter audit to further improve cost recovery. A steering committee should be setup to report on a monthly basis to council on water loss figures, leaks repaired, targets, progress, consumer metering, billing and cost recovery. Proper metering, billing and cost recovery should be supported by community awareness that promotes reporting of leaks, fixing of private leaks and efficient use. Based on the estimated available information, a target reduction in NRW of 31.5% down to 19.6% and target input volume reduction of 11.9% have been set. The water tariff structure does not promote WCWDM and is not based on a proper analysis. The municipality should work towards RPMS compliance and improvement of their IDP.											
Rusiness Plan											
The budget requirements for the n	ext five years are su	mmarised in the	table below:								
Intervention	Year 1	Year 2	Year 3	Year 4	Year 5	Total					
Institutional	500 000	200 000	300 000	200 000	200 000	1 400 000					
Financial	13 298 580	13 198 580	13 198 580	13 098 580	13 098 580	65 892 900					
Social	5 301 276	5 101 276	5 101 276	5 101 276	5 101 276	25 706 380					
Technical	21 035 036	20 835 036	20 360 036	20 360 036	20 350 036	102 940 180					
Total	40 134 892	39 334 892	38 959 892	38 759 892	38 749 892	195 939 460					
Compliance											
Results from the Regulatory Per	ormance Measurer	ment System (R	PMS)								
Key	Performance Indicat	ors		Achieved KDI							
				Achieveu KFT	Required score	Performance					
KPI 1: Access to water supply				Score	Required score	Performance assessment					
KPI 2: Access to sanitation				Score 3.165	Required score	Performance assessment Adequate					
				Score 3.165 3.125	Required score 3 3	Performance assessment Adequate Adequate					
KPI 3: Access to Free Basic Water				Score 3.165 3.125 2.689	Required score 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Performance assessment Adequate Adequate Concern					
KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita	tion			Score 3.165 3.125 2.689 0	Required score 3 3 3 3 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Performance assessment Adequate Adequate Concern Crisis					
KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita KPI 5: Drinking Water Quality man	tion agement			Score 3.165 3.125 2.689 0 0	Required score 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Performance assessment Adequate Adequate Concern Crisis Crisis					
KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita KPI 5: Drinking Water Quality manage KPI 6: Wastewater quality manage	tion agement nent			Score 3.165 3.125 2.689 0 0 2	Required score 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Performance assessment Adequate Adequate Concern Crisis Crisis Concern					
KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita KPI 5: Drinking Water Quality manager KPI 6: Wastewater quality manager KPI 7: Customer service quality	tion agement ment			Score 3.165 3.125 2.689 0 2 1.75	Required score 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Performance assessment Adequate Adequate Concern Crisis Crisis Concern Concern					
KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita KPI 5: Drinking Water Quality manager KPI 6: Wastewater quality manager KPI 7: Customer service quality KPI 8: Institutional effectiveness	tion agement ment			Score 3.165 3.125 2.689 0 0 2 1.75 3.343 2.020	Required score 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Performance assessment Adequate Concern Crisis Crisis Concern Concern Concern					
KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita KPI 5: Drinking Water Quality mana KPI 6: Wastewater quality manager KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance	tion agement ment			Score 3.165 3.125 2.689 0 2 1.75 3.343 2.929	Required score 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 4 2	Performance assessment Adequate Concern Crisis Crisis Concern Concern Concern					
KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita KPI 5: Drinking Water Quality mana KPI 6: Wastewater quality manage KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance KPI 10: Strategic asset manageme KPI 11: Water use efficiency	tion agement nent nt			Score 3.165 3.125 2.689 0 2 1.75 3.343 2.929 4.534	Required score 3	Performance assessment Adequate Concern Crisis Crisis Concern Concern Concern Concern Excellent					
KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita KPI 5: Drinking Water Quality mana KPI 6: Wastewater quality manage KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance KPI 10: Strategic asset manageme KPI 11: Water use efficiency	tion agement ment nt			Score 3.165 3.125 2.689 0 2 1.75 3.343 2.929 4.534 No data	Required score 3	Performance assessment Adequate Concern Crisis Crisis Concern Concern Concern Concern Excellent No data					
KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita KPI 5: Drinking Water Quality manage KPI 6: Wastewater quality manage KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance KPI 10: Strategic asset manageme KPI 11: Water use efficiency Results from Blue and Green Dro	tion agement ment nt nt			Score 3.165 3.125 2.689 0 2 1.75 3.343 2.929 4.534 No data	Required score 3	Performance assessment Adequate Concern Crisis Crisis Concern Concern Concern Concern Excellent No data					
KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita KPI 5: Drinking Water Quality manage KPI 6: Wastewater quality manage KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance KPI 10: Strategic asset manageme KPI 11: Water use efficiency Results from Blue and Green Dro Assessment	tion agement ment nt p Assessments		2009	Score 3.165 3.125 2.689 0 0 2 1.75 3.343 2.929 4.534 No data	Required score 3	Performance assessment Adequate Concern Crisis Crisis Concern Concern Concern Excellent No data					
KPI 3: Access to Free Basic Water KPI 4: Access to Free Basic Sanita KPI 5: Drinking Water Quality manager KPI 6: Wastewater quality manager KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance KPI 10: Strategic asset manageme KPI 11: Water use efficiency Results from Blue and Green Dro Assessment Blue drop	tion agement ment nt p Assessments		2009	Score 3.165 3.125 2.689 0 2 1.75 3.343 2.929 4.534 No data 2010 74.50%	Required score 3 2011 63.87%	Performance assessment Adequate Concern Crisis Crisis Concern Concern Concern Excellent No data					

WCWDM STRATEGY AND BUSINESS PLAN: Municipal Water Conservation and Water Demand Management Implementation Process Map

	Performed by WCWDM Strategy	Strategy and Planning P	hase bal Manager, Technical and Financial Directors)		Implementation Performed by Department	Monitoring and Review Performed by Department
		Reviewed by SSC and DV	NA		Reviewed by SSC and DWA	Reviewed by SSC and DWA
Vision	Mission	Status Quo Technical	Strategy Technical	Business Plan Technical	Implementation All Projects	Deliverables
Water Services Act, 108 of 1997 Pro (State of the services in an efficient, affordable, equitable, economical and sustainable manner to all consumers	esidential Target he Nation address 2010) ter Losses by half by 2014	mation on demographics, demands, r loss, level of service water loss contributing factors serformance indicators and targets t value and condition ırtmental organogram	SWOT Analysis : Strengths, Weaknesses, Opportunities & Threats of technical department (human resources, processes, Goals and objectives: Achieving water loss reduction target in terms of available resources and non- revenue water. If no target exists, then goal is to develop a target. How : Identify key principles to achieve target (user pay, water restrictions, consumer education, etc) Actions : Responsible person, measurement and timelines to address SWOT analysis	Bulk metering Leakage control and repair Sectorisation and zone metering Logging and water loss monitoring Non domestic and domestic metering and audits Resolve intermittent supply Pressure management Clean out and recommission existing infrastructure Training and capacity building	Council approval of Strategy and Business Plan Identify key stakeholders - setup working committees Appoint PSP Appoint contractor Assess / determine baseline	Record keeping and reporting process Monthly IWA Water Balance calculation for system and DMA No visible leakage Asset management Comply with Regulations R509 of 2001 Responsible WCWDM individual/unit Measurement against goals
jurisdiction.	Tariffs Meter status Existin	<i>Economic</i> fs ering, billing and revenue collection s ing sources of funding	Economic SWOT Analysis : Strengths, Weaknesses, Opportunities and Threats of funding sources Goals and objectives: Allocate sufficient funding to address WCWDM How : Identify key principles to obtain funding (improved metering and billing, cost recovery, external funding, etc) Actions : Responsible person, measurement and timelines to address SWOT analysis	Economic Review tariff structure Ensure effective metering and billing system Review CAPEX budget in terms of WDM goals Review OPEX budget in terms of WDM goals Develop business plan for external funding Training and capacity building	Implement interventions Project Quality Control Project Financial Management Establish record keeping and reporting processes Assess benefits from implementation Establish take-over procedure	Economic Sufficient budget allocation Realistic tariff setting Efficient meter reading, billing and cost recovery process Measurement against goals
BIG HAIRY AND AUDACIOUS VISION If it doesn't scare you, its not big enough	Custor Comm and co Existin Level o	Social omer profile munication dynamics between WSA consumers ing support structures for consumers of stakeholder involvement	Social SWOT Analysis : Strengths, Weaknesses, Opportunities and Threats of consumers and institution Goals and objectives: Informed and supportive consumer and institution How : Identify key principles to develop turn consumers into customers (political, schools, specific consumer groups, water wise, etc) Actions : Responsible person, measurements and timelines to address SWOT analysis	Social Raise awareness at political levels Raise awareness at institutional levels lidentify and engage relevant stakeholders Establish customer care centre Training and capacity building Conduct WC/WDM education and awareness Conduct schools awareness campaigns	Training and capacity building	Social Political support Institutional support Informed, involved and supportive consumer Measurement against goals
	Existe Existe Regula Legisia	Institutional ence of approved policies ence of approved bylaws latory compliance lative compliance	timelines to address SWOT analysis Institutional SWOT Analysis : Strengths, Weaknesses, Opportunities and Threats of policies, bylaws, political support, enforcement, Regulatory compliance Goals and objectives: Reform organisation to support WCWDM How : Identify key principles to obtain improve (improved political support, policies, enforcement, etc) Actions : Responsible person, measurement and	Institutional Establish policies in terms of payment for services, arrears, Establish bylaws that addresses water loss reduction and efficiency Succession planning - ensure initiatives continue		Institutional Approved bylaws Policy and bylaws enforcement Regulatory compliance Succession plan Measurement aga

Review and update strategy and business plan. Implement and regulate.

Strategy & Business Plan_Greater Letaba/Process Map WRP Consulting Engineers Pty Ltd

WCWDM STRATEGY : Definitions

Terminology

Acronym	Description	Link
DWA	Department of Water Affairs	http://www.dwa.gov.za
WS RPMS	Water Services : Regulatory Performance Measurement System	http://www.dwa.gov.za/dir_ws/rpm/
WS NIS	Water Services : National Information System	http://www.dwa.gov.za/dir_ws/wsnis/
FBS	Water Services : Free Basic Water Project	http://www.dwaf.gov.za/dir_ws/fbw/
NRW	Non-revenue water. Volume of water for which no revenue is received (preferred term)	
UAW or UFW	Unaccounted-for water. Volume of water lost due to physical and apparent losses (not preferre	d term)
StatsSA NFC	Statistics South Africa : Non-Financial Census of Municipalities P9115	http://www.statssa.gov.za/

Information sources

Item	Source	Calculation
Population	DWA WS NIS or municipality	
Households	DWA WS NIS or municipality	
Connections - metered	Extrapolated 2007 DWA - WS FBW serviced above RDP or municipality	
Connections - Unmetered	Extrapolated 2007 DWA - WS FBW serviced at RDP or municipality	
Length of mains (km)	Actual value or calculated at average of 50 connections / km of mains	# connections ÷ 50
(A) System input volume	Total volume of potable water supplied by the municipality in kl/annum	
(B) Billed metered consumption	Total volume of water metered and billed by the municipality in kl/annum	
(C) Billed unmetered consumption	Total volume of water unmetered and billed by the municipality in kl/annum	
Underlined values	Calculated values using trends or averages	

Standard IWA Water Balance

	AUTHORISED CONSUMPTION: 1 + 2 + 3 + 4 Total water used for legitimate purposes 1. Billed metered water 2. Billed un-metered water 3. Unbilled metered water	BILLED METERED: 1. Water is billed for based on a metered consumption (see further explanatory notes). BILLED UN-METERED: 1 + 2 1. Water is billed for based on a flat rate tariff (ie. Not based on a flat rate tariff (ie. Not based on a meter reading) 2. Free basic water used through unbilled un-metered stand pipes or yard connections (see further explanatory notes)	REVENUE WATER: 1 + 2 1. Billed metered 2. Billed un-metered
SYSTEM INPUT VOLUME: 1 + 2 + 3 1. Total water treated and measured at treatment works outlet	 Unbilled un-metered water 	UNBILLED METERED: 1. Usually very small in RSA, can include government buildings or parks that is metered but not billed.	
 Total water pumped directly from boreholes into reticulation system Total water purchased from bulk water services provider 		 UNBILLED UN-METERED: Estimated water used for legitimate purposes such as fire fighting. Also usage above free basic water for un- metered unbilled standpipe and yard connection usage. (see notes) 	NON REVENUE WATER:
Unaccounted for Water (UAW / UFW)	TOTAL LOSSES: 1 + 2 Total water not used for legitimate purposes 1. Apparent losses	APPARENT LOSSES: 1+2+3 Water used through illegal connections Water used but not billed for because of inaccurate meters Water used but not billed for because of data transfer errors, low estimated readings or any administrative errors.	 Unbilled metered Unbilled un-metered Apparent losses Real losses
	2. Real losses	REAL LOSSES: 1. Water that leaks from the system through pipes and connections or overflows from reservoirs	

Apparent Losses

Illegal connections	%	Water Quality	Meter age and accuracy	%	Data transfer	%
Very high	10%	Very poor	> 10 years	10%	Very poor	9%
High	8%	Poor		8%	Poor	7%
Average	6%	Average	5-10 years	6%	Average	5%
Low	4%	Good		4%	Good	3%
Very low	2%	Very good	< 5 years	2%	Very good	1%

WCWDM STRATEGY : Base Information

Mun	Municipality name Greater Letaba				Date of current data	2012
				Current	Target	Change
	Demographics II	DP Ref				, i i i i i i i i i i i i i i i i i i i
	Population	Par 2.4	No	268 398	268 398	0
	Urban		No	18 787	18 787	
	Rural		No	249 611	249 611	
	Households	Par 2.4	No	25 811	25 811	0
	Urban		No	25 811	25 811	
	Rural		No			
	Household density		Pop / HH	4.30	10.40	
	Growth rate: 5 years	Par 4 1 3	%			0
	Consumer units	Par 3.3	No	24	24	0
	Residential		No		0	•
	Police stations		No	3	3	
	Magistrates Offices		No		0	
	Business		No		0	
	Dry industries		No		0	
	Office buildings		No		0	
	Prisons		No		0	
	Schools		No		0	
	Health facilities		No	21	21	
	Wet industries		No		0	
	Mining		No		0	
	Resorts and tourism		No		0	
	Infrastructure				-	
	Water Level of Service	Par 3.1	no	55 332	55 332	0
	Stand pipes		HH	32 443	32 443	0
	Yard connections		HH	17 069	17 069	
	House connections		HH	5 820	5 820	
	Length of mains (km)	Par 5.1.2	km	937.0	937.0	0
	Connections / km of mains		No / km	59.1	59.1	
Data	Average system pressure		m	40	40	0
put	Time pressurised		%	70%	100%	0
<u> </u>	Sanitation Level of Service	Par 3.2		46 036	46 036	0
	None water borne		No	33 752	33 752	
	Water borne low flush		No	5 299	5 299	
	Septic tanks / conservancy		No	1 686	1 686	
	Water borne - WTW		No	5 299	5 299	
	Apparent losses		%	17%	17%	0%
	Consumer meter age		%	6%	6%	0%
	Illegal connections		%	6%	6%	0%
	Data transfer		%	5%	5%	0%
	Water balance data					
	System input volume		kℓ/annum	13 302 000	13 035 960	-266 040
	Own sources		k€/annum	9 285 000	9 099 300	-185 700
	Other sources		k€/annum	4 017 000	3 936 660	-80 340
	Billed metered consumption		k€/annum	9 112 189	10 479 017	1 366 828
	Billed unmetered consumption		k€/annum			0
	Unbilled metered consumption		k€/annum			0
	Unbilled unmetered consumption		k€/annum			0

	Water Tariffs					
	Rurahasa of hulk water	Dor 10.2	P/onnum			B 0 00
	Furchase of bulk water	Par 10.2	R/annum	D 40 000 000		R 0.00
	Total operating cost		R/annum	R 12 000 000		-R 12 000 000.00
	Rate - Purchase of bulk water		R/KŁ	R 0.00	R 0.00	
	Rate - Total operating		R/kť	R 0.90	R 0.00	
	Domestic Water Tariffs	Par 10.3				
	0 to	6	k€/month	R 3.43	R 3.43	R 0.00
	6 to	10	k ℓ /month	R 3.73	R 3.73	R 0.00
	10 to	50	k€/month	R 4.69	R 4.69	R 0.00
	to		k€/month		R 0.00	R 0.00
	to		k€/month		R 0.00	R 0.00
	> to	50	k€/month	R 5.64	R 5.64	R 0.00
	System input volume		k€/annum	13 302 000	13 035 960	-266 040
	Authorised Consumption		kℓ/annum	9 112 189	10 479 017	1 366 828
	Billed authorised		kℓ/annum	9 112 189	10 479 017	1 366 828
	Billed metered		kl/annum	9 112 189	10 479 017	1 366 828
suc	Billed upmetered		k@/annum	0 112 100	10410011	1 000 020
atic			k@/annum	0	0	0
cn	Unbilled authorised		Ke/annum	0	0	0
Ca	Unbilled metered		kt/annum	0	0	0
JCe	Unbilled unmetere	d	kℓ/annum	0	0	0
alaı	Water losses		k€/annum	4 189 811	2 556 943	-1 632 868
er B	Apparent losses		kℓ/annum	712 268	434 680	0
Vat	Real losses		kℓ/annum	3 477 543	2 122 263	-1 632 868
>	UARL		k€/annum	624 765	892 521	0
	Potential real loss	saving	k€/annum	2 852 778	1 229 741	-1 632 868
	Revenue water		k€/annum	9 112 189	10 479 017	1 366 828
	Non-Revenue water		k€/annum	4 189 811	2 556 943	-1 632 868
	System input volume unit con	sumption				
	litres / capita / day		€/c/d	136	133	-3
	m ³ / household / month		m ³ / hh / month	43	42	-1
	m ³ /connection/month		m ³ /conn/month	20	20	0
	Authorized unit consumption			20	20	v
	litros / capita / day		Plaid	02	107	14
	miles / capita / day		u / u / u	90	107	14
	m ² / nousenoid / month		m [*] / nn / month	29	34	5
	m ³ / connection / month		m [°] / conn / month	14	16	2
	Water loss indicators					
ų	UARL : Losses / connection	/ day	ℓ / conn / day	31	44	13
ato	CARL : Losses / connection	/ day	ℓ / conn / day	172	105	-67
dic	Infrastructure Leakage Index	(ILI)	=	5.57	2.38	-3
ie Ir	Losses / km mains / day		m³ / km / day	10.2	6.2	-4
anc	Non-revenue water		%	31.5%	19.6%	-11.9%
orm	Unbilled Consumption		%	0.0%	0.0%	0.0%
Perf	Water Losses		%	31.5%	19.6%	-11.9%
ey F	Apparent losses		%	5.4%	3.3%	-2.0%
ž	Real losses		%	26.1%	16.3%	-9.9%
	Water balance reduction targe	ts		,•		
	System input volume		%		-2 0%	
	Authorised Consumption		%		-2.0%	
	Rilled outborized		0/		15.0%	
	Dilled authorised		70		15.0%	
	Billed metered		%		15.0%	
	Billed unmetered		%		0.0%	
	Unbilled authorised		%		0.0%	
	Unbilled metered		%		0.0%	
	Unbilled unmetere	d	%		0.0%	
/sis	Average monthly water bill / co	onnection	R / conn / month	R 54	R 64	R 9
hal	Estimated annual income		R / annum	R 36 027 772	R 42 255 942	R 6 228 170
st A	Total water supply cost		R / annum	R 12 000 000	R 0	-R 12 000 000
Co	Net profit / loss		R / annum	R 24 027 772	R 42 255 942	R 18 228 170
- >	Town and description		Source	MI/day	m ³ /annum	million m ³ /annum
0.5			500106	initially	in /ainuill	mmon m /ailluill

e an pac	Letaba Politisi / Modjadji	Blue Drop 2012	13.30	4 854 500	4.855
urc t Ca	Middle Letaba	Blue Drop 2012	9.00	3 285 000	3.285
So				0	0.000
ater					0.000
N L	Total		22.30	8 139 500	8.140

Current IWA Water Balance Diagram (million m ³ /annum)										
System Input Volume = 13.302	Authorised consumption = 9.112	Billed authorised = 9.112	Billed metered = 9.112	Revenue water = 9.112						
		Apparent losses = 0.712	Apparent losses = 0.712							
	Water losses = 4.190	Real Losses = 3.478	Real Losses = 3.478	Non-revenue water = 4.190						

Target IWA Water Balance Diagram (million m ³ /annum)									
System Input Volume = 13.036	Authorised consumption = 10.479	Billed authorised = 10.479	Billed metered = 10.479	Revenue water = 10.479					
		Apparent losses = 0.435	Apparent losses = 0.435						
	Water losses = 2.557	Real Losses = 2.122	Real Losses = 2.122	Non-revenue water = 2.557					
		Reduced Input Volume = 0.266							

WCWDM STRATEGY : Water Balance History

Municipality Name Greater Letaba

		Year ending	Jun-05	Jun-06	Jun-07	Jun-08	Jun-09	Jun-10	Jun-11	Jun-12	Jun-18
	Population		240 345	241 914	243 363	245 192	246 664	225 681	239 222	268 398	380 728
	Households		56 954	57 324	57 665	58 095	58 442	53 468	56 676	63 087	89 490
	Connections - met	ered	23 638	23 793	23 935	24 115	24 260	22 196	<u>23 528</u>	<u>24 939</u>	35 377
	Connections - Unme	etered	22 000	22 143	22 275	22 441	22 575	20 654	<u>21 893</u>	<u>23 206</u>	32 919
Data	Length of mains (km)	913	919	924	931	937	857	<u>689</u>	<u>731</u>	1 037
Input	System input volume	kl/annum	10 915 930	10 942 982	12 733 408	12 807 870	12 882 332	13 795 202	14 374 451	13 302 000	13 035 960
	Billed metered consumption	kl/annum	7 125 782	7 331 249	8 585 396	8 291 783	7 998 170	8 677 638	8 947 877	9 112 189	10 479 017
	Billed unmetered consumption	kl/annum	504 000	120 000	0		10 800				
	Unbilled metered consumption	kl/annum									
	Unbilled unmetered consumption	kl/annum									
ions	Revenue water	kl/annum	7 629 782	7 451 249	8 585 396	8 291 783	8 008 970	8 677 638	8 947 877	9 112 189	10 479 017
alculat	Non-Revenue water	kl/annum	3 286 148	3 491 733	4 148 012	4 516 087	4 873 362	5 117 565	5 426 574	4 189 811	2 556 943
nce Ca	Water Losses	kl/annum	3 286 148	3 491 733	4 148 012	4 516 087	4 873 362	5 117 565	5 426 574	4 189 811	2 556 943
r Bala	% Non-revenue w	ater	P 30.1%	陀 31.9%	P 32.6%	₱ 35.3%	P 37.8%	P 37.1%	隆 37.8%	P 31.5%	陀 19.6%
Wate	% Water Losse	s	P 30.1%	陀 31.9%	P 32.6%	P 35.3%	P 37.8%	P 37.1%	隆 37.8%	P 31.5%	陀 19.6%
ý	Input : Litres / capita	a / day	P 124	۴ 124	۴ 143	۴ 143	۴ 143	۴ 167	۴ 165	۴ 136	94 🥐
dicato	Input: m³ / household	/ month	۴ 16	۴ 16	۴ 18	۴ 18	۴ 18	22 🏱	21 🖗	۴ 18	P 12
nce inc	Billed : Litres / capita	a / day	87	۴ 84	97 🥐	93 🥐	89 🥐	۴ 105	P 102	۹3 🦻	۴ 75
formaı	Billed : m ³ / household	/ month	11 🖗	۴ 11	۴ 12	۴ 12	۴ 11	۴ 14	۴ 13	P 12	۴ 10
ey peri	% Population gro	wth		0.65%	0.60%	0.75%	0.60%	-8.51%	6.00%	12.20%	59.15%
Ŷ	% Water demand g	rowth		0.25%	16.36%	0.58%	0.58%	7.09%	4.20%	-7.46%	-9.31%
	Source of information		DWA NIS StatsSA NFC	DWA NIS StatsSA NFC	DWA NIS StatsSA NFC	DWA NIS	DWA NIS StatsSA NFC	DWA NIS			



WCWDM STRATEGY : Qualitative Scorecard

Municipality Name Greater Letaba

Introduction

The purpose of this section is to perform a qualitative evaluation of the municipality's water business. The objectives are as follows :

SWOT Analysis	External - Opportunities Positive external conditions which you don't control which you could take advantage of	External - Threats Negative conditions you don't control but could minimise their effects
Internal - Strengths Positive aspects under your control and on which you may wish to capitalise	Strengths and Opportunities (SO) – Strategies that use strengths to maximize opportunities.	Strengths and Threats (ST) – Strategies that use strengths to minimize threats.
Internal - Weaknesses Negative aspects under your control (to a large extent) which you could plan to improve	Weaknesses and Opportunities (WO) – Strategies that minimize weaknesses by taking advantage of opportunities.	Weaknesses and Threats (WT) – Strategies that minimize weaknesses and avoid threats.

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
1	INSTITUTIONAL REVIEW				
1.1	Water and Sanitation department structure				
1.1.1	Is there an approved organogram for the Water and Sanitation Department?				
1.1.2	What is the vacancy rate in the department and is it a problem?				
1.1.3	Does the department have the correct technical skills for the correct posts.				
1.1.4	Is training and capacity building being done?				
1.1.5	Are there sufficient support structures ito vehicles, equipment, materials etc.?				
1.1.6	Does the municipality own any water loss control equipment such as loggers, listening sticks, etc.?				
1.2	Municipal support				
1.2.1	Describe the working relationship with other departments such finance, planning, housing etc.?				
1.2.2	Are the politicians supporting the department?				
1.3	Public Private Partnerships				
1.3.1	Is there any major industrial or institutional role				
	player in the area and is there co-operation? (i.e.				
	Mines or industries that impacts heavily on the				
	municipalities existence)				
1.3.2	If yes, what does the co-operation involve and can it be expanded?				
1.4	Legislation and bylaws				
1.4.1	Does the municipality have a customer service charter?				
1.4.2	What is the status and age of the existing bylaws and do they address water loss management?				
1.4.3	Are bylaws enforced and if not, why not?				
1.4.4	What is the status and age of Water Services Development Plan?				

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
2	FINANCIAL REVIEW				
2.1	Financial Department				
2.1.1	What is your opinion of the Finance Department's ability to perform metering and billing				
2.1.2	Is training and capacity building being done?				
2.1.3	What is the state of the municipal metering and billing system?				
2.1.4	What is your primary source of funding?				
2.2	Tariffs				
2.2.1	Who prepares the water tariffs and what is it based on?				
2.2.2	What is the tariff structure and does it promote WCWDM?				
2.2.3	Is the water supplied considered affordable by the customers?				
2.3	Meter Reading and Billing				
2.3.1	Who performs the water meter readings, frequency and accuracy?				
2.3.2	Are the meter readers trained and can they report leakage when encountered on site?				
2.3.3	Is the water bill understandable and informative?				
2.4	Credit control				
2.4.1	Is credit control being implemented and by whom?				
2.4.2	What is the current level of non-payment?				
3	SOCIAL REVIEW		r		
3.1	Customer profile				
3.1.1	Describe the general consumer profile i.e. Income levels, indigence, unemployment, literacy				
3.1.2	Describe the relationship between customers and the municipality and reasons?				
3.2	Customer awareness				
3.2.1	Are consumers informed regarding the value of water?				
3.2.2	What is the level of leakage reporting by the community and what method do they use?				
3.2.3	What are the most prominent consumer behavioural challenges encountered by the municipality?				
3.2.4	Is xeriscaped gardening and rain water harvesting encouraged?				
3.2.5	Are radio campaigns, bill board, pamphlets, informative billing used to inform and educate customers?				
3.3	Schools awareness				ļ
3.3.1	Number of primary and secondary schools?				ļ
3.3.2	Frequency and scope of schools awareness campaigns?				
3.3.3	Are goals and objectives monitored and controlled?				ļ
3.4	Customer Care Centre				ļ
3.4.1	Does the municipality have a CCC and who operates it?				ļ
3.4.2	How and to whom are billing queries referred?				ļ
3.4.3	I o whom are the leak reports referred and do consumers have confidence in the reporting system?				ļ
					1

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
4	TECHNICAL REVIEW	·			
4.1	Measurement and control				
4.1.1	Is the system input volume measured, monitored and controlled?				
4.1.2	Is the water supply system sectorised into zones and districts?				
4.1.3	Are the supply to the zones and districts metered?				
4.1.4	Is the system monitored through a telemetry system?				
4.1.5	What is the Frequency and detail of your water balance calculation?				
4.1.6	Are minimum night flows, consumption trends and logging used to monitor the system?				
4.1.7	Are monthly management reports prepared and key performance indicators measured?				
4.2	Physical leakage				
4.2.1	What is the average age of the network, pipe material, replacement programme?				
4.2.2	Number of burst pipes reported and repaired per week / month and the average response time?				
4.2.3	What is the primary cause of burst pipes?				
4.2.4	Are active leak detection programmes conducted?				
4.2.5	How often and for how long do reservoirs overflow?				
4.2.6	Are water losses from treatment processes (backwash, etc.) monitored and minimised?				
4.2.7	Is leakage on private properties a problem and if so, why?				
4.2.8	Are leaks on indigent private properties repaired and removal of wasteful devices encouraged?				
4.3	Pressure management and control valves				
4.3.1	What is the average and maximum system pressure?				
4.3.2	Is basic or advanced pressure management being implemented?				
4.3.3	Are control valves pro-actively being maintained to prevent overflowing reservoirs?				
4.4	Consumer metering				
4.4.1	Are domestic and non-domestic consumers metered and which type of meter is used?				
4.4.2	What is the condition, age and accuracy of water meters?				
4.4.3	Are the top consumers pro-actively monitored on a monthly basis?				
4.4.4	Describe the water quality and its impact on consumer water meters?				
4.4.5	What is the prevalence and control of illegal connections?				
4.5	Management information				
4.5.1	Does the Municipality have an asset register and asset management programme?				
4.5.2	What is the status and age of as-built drawings?				

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
Summary					

SWOT Analysis	Helpful	Harmful
Internal factors (Staff, infrastructure, tools, equipment)		
Internal factors (Politics, finance, consumers, economics)		

WCWDM STRATEGY : Quantitative Scorecard

Municipality Name Greater Letaba

Introduction

The purpose of the Water Conservation / Water Demand Management (WC/WDM) Scorecard is to ascertain the status quo of WC/WDM and evaluate the potential for WC/WDM measures to be implemented in these systems. The scorecard is also designed to enable the Regulator (Department of Water Affairs) to assess the current situation regarding losses and levels of wastage in all water supply systems countrywide. The scorecard consists of 25 multiple choice questions with each question getting scored from 0 to 4. The Regulator and WSA can track progress with each year the scorecard gets completed. Each question ends with an audit requirement which indicates what will be required by the Regulator should the questionnaire be audited. It also provides an indication on what is required in terms of each of the measures.

Completed by			
Date			Average
1. Development of Standard Water Balance			
2. December of complexity all concerns (000/ of time			
2. Pressurised supply to all consumers 100% of time			
3. Residential Metering System			
4. Non Residential Meters (Commercial, Industrial and Institutional)			
E. Effective Dilling Oration 9 Information Dilling			
5. Effective Billing System & Informative Billing			
6. Network (Leakage) Complaints System			
7. Billing and Metering Complaints System			
Accest Deviator for Water Deticulation System			
o. Asset Register for water Reliculation System			
9. Asset Management - Capital Works			
	•		
10. Asset Management - Operations and Maintenance			
11 Dedicated WDM support			
12. Active Leakage Control			
13. Effective Sectorisation			
14. Effective Bulk Meter Management			
15. Effective Zone Meter Management and Night Flow Analysis			
16. Pressure Management and Maintenance of Pressure Reducing Valves			
17. As-Built Drawings of Bulk and Reticulation Infrastructure			
18. Schematic Layout of Water Infrastructure			

				•
Date				Average
19. Regulations and Bylaws				
20. Tariffs				
21. Technical Support to Customers				
22. Removal of Unlawful Connections				
23. Community Awareness and Education Programmes				
24. Schools Awareness and Education Programmes				
25. Newspaper & radio articles plus posters and leaflets for distribution				
Total score (maximum 100)		0	0	0



WCWDM STRATEGY AND BUSINESS PLAN : BUDGET AND CASH FLOW

Municipality name Greater Letaba

COSTS										
	Item	Unit	Quantity / year	Rate	Year 1	Year 2	Year 3	Year 4	Year 5	Total
INSTITUTION	AL / LEGISLATIVE INTERVENTIONS									
Institutional re	view:				100%					100%
CAPEX	Review organogram and fill vacancies	Sum	1	R 200 000	R 200 000	R 0	R 0	R 0	R 0	R 200 000
OPEX		Sum			R 0	R 0	R 0	R 0	R 0	R 0
Training and e	ducation :				50%	50%				100%
CAPEX	Not applicable	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Assume one training course / employee / annum	No	20	R 5 000	R 100 000	R 500 000				
Customer cha	rter, policy, bylaws :				50%		50%			100%
CAPEX	Review bylaws on 5 year cycles	Sum	1	R 200 000	R 100 000	R 0	R 100 000	R 0	R 0	R 200 000
OPEX	Enforce bylaws	Sum	1	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 500 000
FINANCIAL IN	ITERVENTIONS									
Effective mete	ring and billing :				50%	50%				100%
CAPEX	Perform meter audit	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Ensure proper metering and billing of all consumers	No	59 539	R 100	R 5 953 900	R 29 769 500				
Water tariffs :			•		50%		50%	•		100%
CAPEX	Review water tariffs	Sum	1	R 200 000	R 100 000	R 0	R 100 000	R 0	R 0	R 200 000
OPEX	Not applicable	Sum		R 0	R 0	R 0	R 0	R 0	R 0	R 0
Informative bil	ling :				50%	50%				100%
CAPEX	Improve invoice to show monthly consumption	Sum	1	R 200 000	R 100 000	R 100 000	R 0	R 0	R 0	R 200 000
OPEX	Distribute information with bill	Sum	59 539	R 120	R 7 144 680	R 35 723 400				
	·				•		·			
SOCIAL INTE	RVENTIONS									
Consumer Av	vareness Campaign :				20%	20%	20%	20%	20%	100%
CAPEX	Install bill boards, design pamphlets, radio campaigns	Sum	59 539	R 120	R 1 428 936	R 7 144 680				
OPEX	Target households on monthly basis with awareness cam	No	59 539	R 60	R 3 572 340	R 17 861 700				
Consumer He	elp and Support Desk :				100%					100%
CAPEX	Improve existing help-desk to provide one-stop service	Sum	1	R 200 000	R 200 000	R 0	R 0	R 0	R 0	R 200 000
OPEX	Maintain help-desk	Sum	1	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 500 000
Schools awa	reness :				20%	20%	20%	20%	20%	100%
CAPEX	Prepare schools competition, awareness, retrofit	No		R 20 000	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Monthly schools awareness campaign	No		R 2 000	R 0	R 0	R 0	R 0	R 0	R 0
	·									

TECHNICAL IN	NTERVENTIONS									
Bulk metering	:				50%	50%				100%
CAPEX	New meter installations required	No		R 50 000	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Maintenance of existing bulk meters	No		R 1 000	R 0	R 0	R 0	R 0	R 0	R 0
Sectorisation	:				50%	50%				100%
CAPEX	Setup of new DMA / PMAs	No	5	R 50 000	R 125 000	R 125 000	R 0	R 0	R 0	R 250 000
OPEX	Maintenance of DMA / PMAs including step testing	No	5	R 25 000	R 125 000	R 125 000	R 125 000	R 125 000	R 125 000	R 625 000
Active Leakag	e Control :	•			50%	50%				100%
CAPEX	Not applicable	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Fix all visible and reported leaks	No	937	R 1 000	R 937 000	R 4 685 000				
Valve audits		•			20%	20%	20%	20%	20%	100%
CAPEX	Locate, clean, repair, document network valves	No	3 748	R 4 000	R 2 998 400	R 14 992 000				
OPEX	Maintain network valves	No	750	R 1 000	R 749 600	R 3 748 000				
Leak and logg	ing equipment :			<u>.</u>	25%	25%	25%	25%		100%
CAPEX	Procure basic WDM equipment	Sum	2	R 20 000	R 10 000	R 10 000	R 10 000	R 10 000	R 0	R 40 000
OPEX	Not applicable	Sum			R 0	R 0	R 0	R 0	R 0	R 0
Telemetry :				<u>.</u>		50%	50%			100%
CAPEX	Install telemetry sites	No		R 15 000	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Maintain telemetry sites	No		R 1 500	R 0	R 0	R 0	R 0	R 0	R 0
Retrofitting an	d removal of wasteful devices :			<u>.</u>	20%	20%	20%	20%	20%	100%
CAPEX	Retrofit government buildings, schools, etc.	No	11 908	R 1 000	R 2 381 560	R 11 907 800				
OPEX	Not applicable	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
Mains replace	ment :	•			20%	20%	20%	20%	20%	100%
CAPEX	Replace critical leaking mains	km	18.7	R 100 000	R 374 800	R 1 874 000				
OPEX	Not applicable	km		R 0	R 0	R 0	R 0	R 0	R 0	R 0
Pressure man	agement :				50%	50%				100%
CAPEX	New pressure management installations	No	4	R 75 000	R 150 000	R 150 000	R 0	R 0	R 0	R 300 000
OPEX	Maintain pressure management installations	No	4	R 5 000	R 20 000	R 20 000	R 20 000	R 20 000	R 20 000	R 100 000
Control valve	management :				50%	50%				100%
CAPEX	New control valve installations	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Maintain all control valve installations	No		R 5 000	R 0	R 0	R 0	R 0	R 0	R 0
Consumer me	tering :				20%	20%	20%	20%	20%	100%
CAPEX	Replacement of old water meters	No	5 954	R 1 200	R 1 428 936	R 7 144 680				
OPEX	Replacement of broken and cycled water meters	No	2 977	R 1 200	R 3 572 340	R 17 861 700				
Top consume	r audit :				20%	20%	20%	20%	20%	100%
CAPEX	Audit and retrofit non domestic consumers	No	2 977	R 10 000	R 5 953 900	R 29 769 500				
OPEX	Maintain non domestic consumers installations	No	2 977	R 500	R 1 488 500	R 1 488 500	R 1 488 500	R 1 488 500	R 1 488 500	R 7 442 500
GIS / CAD sys	tem :				50%	50%				100%
CAPEX	Setup CAD/ GIS system	Sum	1	R 200 000	R 100 000	R 100 000	R 0	R 0	R 0	R 200 000
OPEX	Maintain CAD / GIS system	Sum	1	R 200 000	R 200 000	R 200 000	R 200 000	R 200 000	R 200 000	R 1 000 000
Management I	nformation System :		-		50%	50%				100%

CAPEX	Setup basic MIS system to support WDM	Sum	1	R 200 000	R 100 000	R 100 000	R 0	R 0	R 0	R 200 000
OPEX	Maintain MIS system	Sum	1	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 500 000
Water loss m	onitoring and audits:	•			100%					100%
CAPEX	Perform proper analysis of distribution network	Sum	1	R 200 000	R 200 000	R 0	R 0	R 0	R 0	R 200 000
OPEX	Perform ad hoc analysis to monitor interventions	Sum	1	R 20 000	R 20 000	R 20 000	R 20 000	R 20 000	R 20 000	R 100 000
	ltem	Туре			Year 1	Year 2	Year 3	Year 4	Year 5	Total
TOTAL COST	ſS									
Institutional		CAPEX			R 300 000	R 0	R 100 000	R 0	R 0	R 400 000
		OPEX			R 200 000	R 1 000 000				
		TOTAL			R 500 000	R 200 000	R 300 000	R 200 000	R 200 000	R 1 400 000
Financial		CAPEX			R 200 000	R 100 000	R 100 000	R 0	R 0	R 400 000
		OPEX			R 13 098 580	R 65 492 900				
		TOTAL			R 13 298 580	R 13 198 580	R 13 198 580	R 13 098 580	R 13 098 580	R 65 892 900
Social		CAPEX			R 1 628 936	R 1 428 936	R 7 344 680			
-		OPEX			R 3 672 340	R 18 361 700				
		TOTAL			R 5 301 276	R 5 101 276	R 25 706 380			
Technical		CAPEX			R 13 822 596	R 13 622 596	R 13 147 596	R 13 147 596	R 13 137 596	R 66 877 980
		OPEX			R 7 212 440	R 36 062 200				
		TOTAL			R 21 035 036	R 20 835 036	R 20 360 036	R 20 360 036	R 20 350 036	R 102 940 180
Total		CAPEX			R 15 951 532	R 15 151 532	R 14 776 532	R 14 576 532	R 14 566 532	R 75 022 660
		OPEX			R 24 183 360	R 120 916 800				
		TOTAL			R 40 134 892	R 39 334 892	R 38 959 892	R 38 759 892	R 38 749 892	R 195 939 460
					R 40 134 892	R 39 334 892	R 38 959 892	R 38 759 892	R 38 749 892	
BENEFITS										
	Item	Unit			Year 1	Year 2	Year 3	Year 4	Year 5	Total
CHANGE IN (CONSUMPTION									
Reduced inpu	t volume	_			20%	40%	60%	80%	100%	300%
Volume		m ³ /annum	266 040		53 208	106 416	159 624	212 832	266 040	798 120
Amount		R / annum	266 040	R 4.50	R 239 436	R 478 872	R 718 308	R 957 744	R 1 197 180	R 3 591 540
Increased rev	enue water				20%	40%	60%	80%	100%	300%
Volume		m ³ /annum	1 366 828		273 366	546 731	820 097	1 093 463	1 366 828	4 100 485
Amount		R / annum	1 366 828	R 9.00	R 2 460 291	R 4 920 582	R 7 380 873	R 9 841 164	R 12 301 455	R 36 904 364
			, , , , , , , , , , , , , , , , , , , ,	,						
Total		R / annum			R 2 699 727	R 5 399 454	R 8 099 181	R 10 798 908	R 13 498 635	R 40 495 904

Payback period - years 4.8

WC/WDM Projection summary and targets

Municipality name Greater Letaba

Water Demand projection	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 5.0% WDM Scenario							14.25	14.27	14.29	14.31	14.33	14.35
Less 10.0% WDM Scenario							14.13	14.03	13.93	13.82	13.71	13.59
Less 15.0% WDM Scenario							14.01	13.79	13.56	13.32	13.08	12.84
Actual Demand	10.92	10.94	12.73	12.81	12.88	13.80	14.37					
High population No WDM							14.37	14.51	14.66	14.81	14.95	15.10
Current yield	13.30	13.30	13.30	13.30	13.30	13.30	13.30	13.30	13.30	13.30	13.30	13.30

Savings	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 5.0% WDM Scenario							0.12	0.24	0.37	0.49	0.62	0.76
Less 10.0% WDM Scenario							0.24	0.48	0.73	0.99	1.25	1.51
Less 15.0% WDM Scenario							0.36	0.73	1.10	1.48	1.87	2.27
Actual savings							0.00					

% Reduction	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 5.0% WDM Scenario							0.83%	1.67%	2.50%	3.33%	4.17%	5.00%
Less 10.0% WDM Scenario							1.67%	3.33%	5.00%	6.67%	8.33%	10.00%
Less 15.0% WDM Scenario							2.50%	5.00%	7.50%	10.00%	12.50%	15.00%

Year / Year % Growth	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 5.0% WDM Scenario								0.2%	0.1%	0.1%	0.3%	0.3%
Less 10.0% WDM Scenario								-0.7%	-0.7%	-0.8%	-1.6%	-1.6%
Less 15.0% WDM Scenario								-1.6%	-1.7%	-1.7%	-3.5%	-3.7%
Actual Demand		0.2%	16.4%	0.6%	0.6%	7.1%	4.2%					
High population No WDM								1.0%	1.0%	1.0%	1.0%	1.0%

Key Performance Indicators	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Population (DWA, NIS)	240 345	241 914	243 363	245 192	246 664	225 681	239 222					
Households (DWA, NIS)	56 954	57 324	57 665	58 095	58 442	53 468	56 676					
l/c/d	124	124	143	143	143	167	165					
m3/hh/month	16	16	18	18	18	22	21					
Demand MI/day	30	30	35	35	35	38	39					



l/c/d

— Linear (l/c/d)

----- Linear (m3/hh/month)

m3/hh/month



WCWDM STRATEGY : RPMS Compliance

Municipality name Greater Letaba

Key questions from the Regulatory Performance Measurement System (RPMS) related to WC/WDM

KPI		ID	WSA Value	
KPI 1 – <i>I</i>	Access to Water			
KPI 2 – A	Access to Sanitation			
KPI 3 – A	Access to Free Basic Water			
	Total poor households receiving Free Basic Water for last financial year	ID:012		
	Total poor households			
KPI 4 – <i>I</i>	Access to Free Basic Sanitation			
	Total poor households receiving Free Basic Sanitation for last financial year			
	Total poor households	ID:013		
KPI 5 – [Drinking Water Quality			
KPI 6 –V	Vastewater Quality			
KPI 7 - C	ustomer Services Standards			
Compon	ent 1 – Service Interruptions			
	Total number of Service interruptions in the last financial year	ID:034		
	Number of interruptions in continuous service to consumers, where interruption for a single incident was greater than 24h	ID:033		
Compon	ent 2 – CRM Systems			
	Does the WSA have a customer Charter	ID:036		
	Does the WSA have a customer service centre	ID:035		
	Is there a system to manage customer queries and log faults	ID:038		
	Does the incident tracking system escalate complaints if not responded to within a prescribed time?	ID:037		
KPI 8 - Ir	istitutional Effectiveness			
Compon	ent 1 - Institutional Effectiveness			
	Completed WSDP is approved by Council for the last financial year?	ID:039		
	Required policies are in place and approved by Council?	ID:040		
	Required bylaws are in place and approved by Council?	ID:041		
	Contracts and Service level agreements in place with all appropriate service delivery role-players (WSPs, internal etc)	ID:042		
	The WSA monitors the KPIs defined by the contract or SLA?	ID:043		
Compon	ent 2 - Water Services Staff Effectiveness			
	Total Water Services staff costs for the last financial year	ID:045		
	Total cost of water and sanitation provision for the last financial year including interest and depreciation (expenditure)	ID:046		
	Total budgeted for water services staff according to the approved organogram for the last financial year	ID:078		
Compon	ent 3 - Grant Funding Effectiveness			
	Total grant funding allocation received for the last financial year	ID:048		
	Total grant funding allocation spent for the last financial year	ID:047		
Compon	ent 4 - WSA Annual Report			
	WSA annual report submitted to Minister	ID:077		
Compon	ent 5 - % Filled Posts on Organogram			
	Total number of posts on Council-approved organogram for the last financial year for water services staff	ID:080		
	Total number of posts filled on the approved water services organogram in the last financial year	ID:079		

KPI 9 - Financial Performance		
Component 1 – Financial Integrity		
Is WSA ring-fenced? (Separate legal entity=3, Separate accounting entity=2, Partially ring-fenced=1, Not ring-fenced at all=0)	ID:049	
Audit report evaluation. (Unqualified=4, Qualified=3, Adverse=2, Disclaimer=1, No report=0)	ID:050	
Component 2 – Average Debtor Days		
Water Services sales income for the last financial year (water/sanitation)	ID:052	
Total outstanding customer/consumer debt for water and sanitation for the last financial year	ID:051	
Component 3 – Revenue Collection Effectiveness		
Water Services sales income for the last financial year (water/sanitation)	ID:052	
Water Services billed income actually received from consumers for last financial year	ID:053	
Component 4 – Average Creditor Days		
Total bulk water purchases for the last financial year	ID:055	
Total bulk water accounts outstanding for the last financial year	ID:054	
Component 5 – Financial Sustainability		
Total water and sanitation income for the last financial year	ID:056	
Total cost of water and sanitation provision for the last financial year including interest and depreciation (expenditure)	ID:046	
Component 6 – Financial Effectiveness		
Total outstanding customer/consumer debt (after provisions) for water and sanitation for the last financial year	ID:051	
Total provision for doubtful debt for water and sanitation for the last financial year	ID:082	
KPI 10 Strategic Asset Management		
Component 1 - Capital Spent on Rehabilitation and Replacement		
Total capital budget (Water and Sanitation) in the last financial year	ID:063	
Total capital spent on refurbishment and replacement in the last financial year	ID:062	
Component 2 – Asset Management Effectiveness		
Asset management plan status	ID:057	
Asset register status	ID:058	
Asset management system is electronic	ID:059	
Component 3 – O&M Expenditure		
Total spent on O&M/Annual maintenance cost (Water and Sanitation) in the last financial year	ID:060	
Replacement value of assets (water services infrastructure)	ID:061	
Component 4 – Replacement Saving		
Depreciation value for the last financial year (Water and Sanitation infrastructure)	ID:065	
Contribution to asset replacement fund for the last financial year. (Water and Sanitation)	ID:064	
Component 5 – Asset Register Monitoring		
Asset register field monitored: Date acquired	ID:066	
Asset register field monitored: Estimated remaining life of asset	ID:068	
Asset register field monitored: Replacement value of asset	ID:070	
Asset register field monitored: Purchase cost of asset	ID:069	
Asset register field monitored: Description of asset (Yes/No)	ID:067	
KPI 11 Water Demand Management		
System input volume (external sources) for the last financial year	ID:121	
System input volume (own sources) for the last financial year	ID:122	
Total billed metered water consumption (volume) for the last financial year	ID:071	
Total billed unmetered water consumption (volume) for the last financial year	ID:074	
Total unbilled metered water consumption (volume) for the last financial year	ID: 073	
Total unbilled unmetered water consumption (volume) for the last financial year	ID: 123	
ADDITIONAL QUESTIONS FOR WATER USE EFFICIENCY		

Water Conservation and Water Demand Management plan		
Installation of water efficient devices		
Repair of leaks		
Measurement or control of water supplied		
Pressure management		
Additional KPI : Tariff Data		
Which of the listed elements are taken into account when you determine your tariff? Indicate from the list provided	ID: 201	
Total amount of subsidies allocated to water for the next financial year	ID: 202	
Total projected cost of water provision for the next financial year	ID: 203	
Does your tariff recognise the difference between levels of service (according to Regulation 4 under s10 of the Water Services Act)?	ID: 204	
Does your tariff recognise the difference between socio-economic status of customers (according to s10 of the Water Services Act)?	ID: 205	
Do you charge a rising block tariff?	ID: 206	
How many blocks are in your tariff structure?	ID: 207	
What is your approved standard tariff? (Basic levy)	ID: 208	
What are the actual 2010/2011 tariffs for the following consumer categories?	ID: 209	
Do you reflect your tariff structure on your bill?	ID: 210	
What are the quantities of water supplied to the following consumer categories (annually)?	ID: 211	
What is the unit number of consumers served with water in each consumer category?	ID: 212	
Do you have a seasonal tariff in your WSA?	ID: 213	
Does your tariff include a fixed charge?	ID: 214	
If a fixed charge is levied, do you subsidise the FBW?	ID: 215	
What other sources of water services revenue (other than tariffs) does your WSA have? Indicate sources on the list provided	ID: 216	
Total annual water services surplus / deficit	ID: 217	



water affairs

Department: Water Affairs REPUBLIC OF SOUTH AFRICA

Department of Water Affairs

Water Demand Management Strategy and Business Plan

for Greater Tzaneen Local Municipality

May 2013

WCWDM STRATEGY AND BUSINESS PLAN: Signature Page

Title :	Development of a Water Conservation and Water Demand Management Strategy and Business Plan for Greater Tzaneen Local Municipality						
Authors :	WA Wegelin, Z Siqalaba, N Z	/A Wegelin, Z Siqalaba, N Zondo					
Study Name:	Development of a Reconcilia	velopment of a Reconciliation Strategy for the Luvuvhu and Letaba Water Supply System					
Status of Report :	Final draft	nal draft					
Consultants :	WRP Consulting Engineers	(Pty) Ltd					
Approved for Consultants :	Study leader	WA Wegelin, PrEng					
	Position	Name	Signature	Date			
Municipality	Greater Tzaneen						
Approved for municipality :	Municipal Manager						
	Position	Name	Signature	Date			
Department of Water Affairs	Limpopo Region						
Approved for Regional Office :							
	Position	Name	Signature	Date			
Department of Water Affairs	Head Office						
Approved for Head Office							
	Position	Name	Signature	Date			

WCWDM STRATEGY AND BUSINESS PLAN: Contact details

Province	Limpopo	WSA	No			
Municipal Code	LIM333	Category	B4			
District Municipality	<i>I</i> opani					
Municipality	Greater Tzaneen					
Settlements	laenertsburg, Letaba, Letsitele, Maleketla, Mashilwane, Nkambak, Politsi, Tzaneen					

Information provided by						
Date	23/04/2012					
Contact person	Paradise Shilowa	aradise Shilowa				
Position	lanager (Water Services)					
Telephone	15 307 8219 Cell number 079 905 9013					
E-mail	paradise.shilowa@tzaneen.gov.za					
Study team contact						
Company	WRP Consulting Engineers					
Address	PO Box 1522, Brooklyn Square, 0075					
Contact person	Mr Willem Wegelin					
Telephone number	012 346 3496	Cell number	083 4477 999			
E-mail	willemw@wrp.co.za					

Nater Affairs contact						
Directorate	Water Use Efficiency	ter Use Efficiency				
Address	ivate Bag X313, Pretoria, 0001					
Contact person	Koena Given Moabelo					
Telephone number	012 336 8174	Cell number	082 653 9216			
E-mail	<u>MoabeloK@dwa.gov.za</u>					

Nater Balance Data Confidence Level (see legend below)					
Input volume	Estimated values				
Authorised consumption (Engineering functions)	Estimated values				
Meter reading and billing (Finance functions)	Estimated values				
Legend					
High level of accuracy	Calibrated bulk meters, >98% of consumers are metered < 10 years old, <2% billing complaints				
Medium level of accuracy	Functional bulk meters, >90% of consumers are metered, <10% billing complaints				
Low level of accuracy	Some functional bulk meters, >50% consumer meters, any age, meter reading & billing dysfunctional				
Estimated values	No bulk or consumer meter readings, best estimate of water consumption				
No data	No data and no idea of water consumption				

WCWDM STRATEGY AND BUSINESS PLAN: Executive Summary

Province	Limpopo				WSA	No					
Municipal Code	LIM333		Category	B4							
District Municipality	/ Mopani										
Municipality	Greater Tzaneen										
Settlements Haenertsburg, Letaba, Letsitele, Maleketla, Mashilwane, Nkambak, Politsi, Tzaneen											
		Executive	summary								
Status quo											
Limited WCWDM activities are und	lertaken in the LM a	nd there is signif	icant management	t information avail	able to perform a r	udimentary					
assessment of the water losses an	d potential savings	5. The assessment	t is in line with RP	MS, Blue Drop ass	essments, IDP an	d the WSDP.					
Most of the towns are informal with billing and cost recovery in the LM	I The current mete	ure in a significar	ost recovery system	iin the Livi which e	nables proper sco	pe for metering,					
The engineering departments in the	e Local Municipalit	ies are characteri	sed by high vacan	cies and limited c	apacity and skills.						
The current estimated unit consum	nption of 102 l/c/d is	s already very low	and limited furthe	er reduction is exp	ected.						
The relationship with the commun	ity is generally posi	itive and the com	nunities themselv	es are characteris	ed by a relatively l	ow indigent					
population. The water tariffs are n	ot cost reflective he	owever, the consu	imers do value wa	ter and are well in	formed regarding	water					
conservation.											
Strategy											
The municipality should focus on	proper record keep	ing, analysis and	development of de	etailed manageme	nt information. Al	l vacancies must					
be filled as a matter of priority tog	ether with skills trai	nsfer and capacity	/ building. The en	gineering and fina	ince department m	ust work closer					
together to improve metering, billi	ng and cost recover	ry and start with a	meter audit to fur	rther improve cost	recovery. A steel	ring committee					
and cost recovery	nuny basis to coun	cii oli water 1055 i	igures, leaks repa	ireu, largels, prog	ress, consumer m	etering, binnig					
Proper metering, billing and cost r	ecovery should be	supported by con	nmunity awarenes	s that promotes re	porting of leaks, f	ixing of private					
leaks and efficient use. Based on	the estimated avail	able information,	a target reduction	in NRW of 57.9%	down to 46.3% and	d target input					
volume reduction of 5% have beer	set. The water tari	ff structure does	not promote WCW	DM and is not bas	ed on a proper an	alysis. The					
municipality should work towards	RPMS compliance	and improvement	of their IDP.								
Rusiness Plan											
The budget requirements for the n	ext five years are s	ummarised in the	table below:								
	····· , ···· ,										
Intervention	Year 1	Year 2	Year 3	Year 4	Year 5	Total					
Institutional	375 000	175 000	375 000	175 000	175 000	1 275 000					
Financial	19 962 820	19 862 820	19 862 820	19 762 820	19 762 820	99 214 100					
Social	8 007 804	7 807 804	7 807 804	7 807 804	7 807 804	39 239 020					
Technical	30 926 144	30 726 144	30 251 144	30 251 144	30 241 144	152 395 720					
Total	59 271 768	58 571 768	58 296 768	57 996 768	57 986 768	292 123 840					
Compliance											
Results from the Regulatory Perfo	rmance Measureme	ent System (RPMS	5)								
						Def					
Key	Performance Indica	ators		Achieved KPI	Required score	Performance					
KPI 1: Access to water supply				3.165	3	Adequate					
KPI 2: Access to sanitation				3.125	3	Adequate					
KPI 3: Access to Free Basic Water				2.689	3	Concern					
KPI 4: Access to Free Basic Sanita	ation			0	3	Crisis					
KPI 5: Drinking Water Quality man	agement			0	3	Crisis					
KPI 6: Wastewater guality manage		2	3	Concern							
KPI 7: Customer service guality	1.75	3	Concern								
KPI 8: Institutional effectiveness	3.343	3.5	Concern								
KPI 9: Financial performance		2.929	4	Concern							
KPI 10: Strategic asset manageme	nt			4.534	3	Excellent					
KPI 11: Water use efficiency		KPI 11: Water use efficiency									
-		KPI 11: Water use efficiency No data 3 No data									
					3	No data					
Results from Blue and Green Dron	Assessments				3	No data					
Results from Blue and Green Drop	Assessments		2009	2010	2011	No data					
Results from Blue and Green Drop Assessment Blue drop	Assessments		2009 0.00%	<mark>2010</mark> 74.50%	2011 63.87%	No data 2012 79.21%					

WCWDM STRATEGY AND BUSINESS PLAN: Municipal Water Conservation and Water Demand Management Implementation Process Map

	Performed by WCWPM	Strategy and Planning I	Phase		Implementation	Monitoring and Review
	Reviewed by SSC and DWA	Reviewed by SSC and DWA				
Vision	Mission	Status Quo	Strategy	Business Plan	Implementation All Projects	Deliverables
Water Services Act, 108 of 1997 Provide water services in an efficient, affordable, equitable, economical and sustainable manner to all consumers	Presidential Target (State of the Nation address 2010) Reduce water Losses by half by 2014	Information on demographics, demands, water loss, level of service Key water loss contributing factors Key performance indicators and targets Asset value and condition Departmental organogram	SWOT Analysis : Strengths, Weaknesses, Opportunities & Threats of technical department (human resources, processes, Goals and objectives: Achieving water loss reduction target in terms of available resources and non- revenue water. If no target exists, then goal is to develop a target. How: identify key principles to achieve target (user pay, water restrictions, consumer education, etc.) Actions : Responsible person, measurement and timelines to address SWOT analysis	Bulk metering Leakage control and repair Sectorisation and zone metering Logging and water loss monitoring Non domestic and domestic metering and audits Resolve intermittent supply Pressure management Clean out and recommission existing infrastructure Training and capacity building	Council approval of Strategy and Business Plan Identify key stakeholders - setup working committees Appoint PSP Appoint contractor Assess / determine baseline	Record keeping and reporting process Monthly IWA Water Balance calculation for system and DMA No visible leakage Asset management Comply with Regulations R509 of 2001 Responsible WCWDM individual/unit Measurement against goals
jurisdiction.	potential consumers in its area of jurisdiction. Tariffs Meterin status Existing		Economic SWOT Analysis : Strengths, Weaknesses, Opportunities and Threats of funding sources Goals and objectives: Allocate sufficient funding to address WCWDM How : Identify key principles to obtain funding (improved metering and billing, cost recovery, external funding, etc.) Actions : Responsible person, measurement and timelines to address SWOT analysis	Economic Review tariff structure Ensure effective metering and billing system Review CAPEX budget in terms of WDM goals Review OPEX budget in terms of WDM goals Develop business plan for external funding Training and capacity building	Implement interventions Project Quality Control Project Financial Management Establish record keeping and reporting processes Assess benefits from implementation Establish take-over procedure	Economic Sufficient budget allocation Realistic tariff setting Efficient meter reading, billing and cost recovery process Measurement against goals
BIG HAIRY AND AUDACIOUS VISION If it doesn't scare you, its not big enough		Social Customer profile Communication dynamics between WSA and consumers Existing support structures for consumers Level of stakeholder involvement	Social SWOT Analysis : Strengths, Weaknesses, Opportunities and Threats of consumers and institution Goals and objectives: Informed and supportive consumer and institution How : Identify key principles to develop turn consumers into customers (political, schools, specific consumer groups, water wise, etc.) Actions : Responsible person, measurements and timelines to address SWOT analysis	Social Raise awareness at institutional levels Identify and engage relevant stakeholders Establish customer care centre Training and capacity building Conduct WC/WDM education and awareness Conduct schools awareness campaigns	Training and capacity building	Social Political support Institutional support Informed, involved and supportive consumer Measurement against goals
		Institutional Existence of approved policies Existence of approved bylaws Regulatory compliance Legislative compliance	Institutional SWOT Analysis : Strengths, Weaknesses, Opportunities and Threats of policies, bylaws, political support, enforcement, Regulatory compliance Goals and objectives: Reform organisation to support WCWDM How : Identify key principles to obtain improve (improved political support, policies, enforcement, etc.) Actions : Responsible person, measurement and	Institutional Establish policies in terms of payment for services, arrears, Establish bylaws that addresses water loss reduction and efficiency Succession planning - ensure initiatives continue		Institutional Approved policies Approved bylaws Policy and bylaws enforcement Regulatory compliance Succession plan Measurement aga

Review and update strategy and business plan . Implement and regulate.

Strategy & Business Plan_Greater Tzaneen/Process Map WRP Consulting Engineers Pty Ltd

WCWDM STRATEGY : Definitions

Terminology

Acronym	Description	Link
DWA	Department of Water Affairs	http://www.dwa.gov.za
WS RPMS	Water Services : Regulatory Performance Measurement System	http://www.dwa.gov.za/dir_ws/rpm/
WS NIS	Water Services : National Information System	http://www.dwa.gov.za/dir_ws/wsnis/
FBS	Water Services : Free Basic Water Project	http://www.dwaf.gov.za/dir_ws/fbw/
NRW	Non-revenue water. Volume of water for which no revenue is received (preferred term)	
UAW or UFW	Unaccounted-for water. Volume of water lost due to physical and apparent losses (not preferre	d term)
StatsSA NFC	Statistics South Africa : Non-Financial Census of Municipalities P9115	http://www.statssa.gov.za/

Information sources

Item	Source	Calculation
Population	DWA WS NIS or municipality	
Households	DWA WS NIS or municipality	
Connections - metered	Extrapolated 2007 DWA - WS FBW serviced above RDP or municipality	
Connections - Unmetered	Extrapolated 2007 DWA - WS FBW serviced at RDP or municipality	
Length of mains (km)	Actual value or calculated at average of 50 connections / km of mains	# connections ÷ 50
(A) System input volume	Total volume of potable water supplied by the municipality in kl/annum	
(B) Billed metered consumption	Total volume of water metered and billed by the municipality in kl/annum	
(C) Billed unmetered consumption	Total volume of water unmetered and billed by the municipality in kl/annum	
Underlined values	Calculated values using trends or averages	

Standard IWA Water Balance

SYSTEM INPUT VOLUME: 1 + 2 + 3 1. Total water treated and measured at treatment works outlet 2. Total water pumped directly from boreholes into reticulation system 3. Total water purchased from	AUTHORISED CONSUMPTION: 1 + 2 + 3 + 4 Total water used for legitimate purposes 1. Billed metered water 2. Billed un-metered water 3. Unbilled un-metered water 4. Unbilled un-metered water	1. 1. 2.	BILLED METERED: Water is billed for based on a metered consumption (see further explanatory notes). BILLED UN-METERED: 1+2 Water is billed for based on a flat rate tariff (ie. Not based on a meter reading) Free basic water used through unbilled un-metered stand pipes or yard connections (see further explanatory notes)	1. 2.	REVENUE WATER: 1 + 2 Billed metered Billed un-metered
	4. Unbilled un-metered water		UNBILLED METERED: Usually very small in RSA, can include government buildings or parks that is metered but not billed. UNBILLED UN-METERED: Estimated water used for legitimate purposes such as fire fighting. Also usage above free basic water for un-		
Unaccounted for Water (UAW / UFW)	TOTAL LOSSES: 1 + 2 Total water not used for legitimate purposes 1. Apparent losses 2. Real losses	1. 2. 3.	metered unbilled standpipe and yard connection usage. (see notes) 1 + 2 + 3 Water used through illegal connections Water used but not billed for because of inaccurate meters Water used but not billed for because of data transfer errors, low estimated readings or any administrative errors. REAL LOSSES: Water that leaks from the system through pipes and connections or overflows from reservoirs	1. 2. 3. 4.	NON REVENUE WATER: 1+2+3+4 Unbilled metered Unbilled un-metered Apparent losses Real losses

Apparent Losses

Illegal connections	%	Water Quality	Meter age and accuracy	%	Data transfer	%
Very high	10%	Very poor	> 10 years	10%	Very poor	9%
High	8%	Poor		8%	Poor	7%
Average	6%	Average	5-10 years	6%	Average	5%
Low	4%	Good		4%	Good	3%
Very low	2%	Very good	< 5 years	2%	Very good	1%

WCWDM STRATEGY : Base Information

Mun	lunicipality name Greater Tzaneen			Date of current data	2012	
			Current	Target	Change	
	Demographics IDP Ref					
	Population	No	392 426	392 426	0	
	Urban	No	23 546	23 546		
	Rural	No	368 880	368 880		
	Households	No	92 138	92 138	0	
	Urban	No	18 428	18 428		
	Rural	No	73 710	73 710		
	Household density	Pop / HH	4.30	4.26		
	Growth rate: 5 years Par 4.1.	3 %			0	
	Consumer units Par 3.	3 No	61	61	0	
	Residential	No		0		
	Police stations	No	27	27		
	Magistrates Offices	No		0		
	Business	No		0		
	Dry industries	No		0		
	Office buildings	No		0		
	Prisons	No		0		
	Schools	No	34	34		
	Health facilities	No		0		
	Wet industries	No		0		
	Mining	No		0		
	Resorts and tourism	No		0		
	Infrastructure					
	Water Level of Service	no	69 876	69 876	0	
	Stand pipes	HH			0	
	Yard connections	HH				
	House connections	HH	69 876	69 876		
	Length of mains (km)	km	1 370.0	1 370.0	0	
ta	Connections / km of mains	No / km	51.0	51.0		
t Da	Average system pressure	m	40	30	-10	
ndu	Time pressurised	%	90%	100%	0	
-	Sanitation Level of Service		21 600	21 600	0	
	None water borne	No	450	450		
	Water borne low flush	No				
	Septic tanks / conservancy	No	10 850	10 850		
	Water borne - WTW	No	10 300	10 300		
	Apparent losses	%	17%	17%	0%	
	Consumer meter age	%	6%	6%	0%	
	Illegal connections	%	6%	6% ==:	0%	
	Data transfer	%	5%	5%	0%	
	water balance data	1.0/2	44 550 000	44.050.000	00/ 000	
		Kč/annum	14 550 000	14 259 000	-291 000	
	Own sources	ke/annum	14 550 000	14 259 000	-291 000	
	Other sources	ke/annum	44 547 700	40.000.000	U	
	Dilled unmetered consumption	ke/annum	11 517 792	12 093 682	5/5 890	
	Dilied unmetered consumption	ke/annum			0	
	Unbilled unmetered consumption	ke/annum			0	
	onbined unmetered consumption	KC/annum			0	

	Water Tariffs					
	Purchase of bulk water		R/annum	R 50 925 000	R 49 906 500	-R 1 018 500 00
	Total operating cost		P/annum	P 41 700 000	P 41 700 000	-1(1 010 500.00 P 0 00
	Pate Durchase of hulk	wator	D/LP	D 2 50	R 41 700 000	K 0.00
	Rate - Fulchase of buik	water		R 3.JU	L 3.30	
	Rate - Total Operating	Der 40.2	r/rC	K 2.07	K 2.92	
	Domestic water Tarins	Par 10.3	le Ø/ma om the	D 0 54	D 0 54	D 0 00
		6	KC/month	R 0.34	R 0.34	R 0.00
	6 to	10	Ke/month	R 1.48	R 1.48	R 0.00
	10 to	25	kt/month	R 2.63	R 2.63	R 0.00
	25 to	35	kℓ/month	R 3.53	R 3.53	R 0.00
	35 to	100	k€/month	R 3.97	R 3.97	R 0.00
	> to	101	k€/month	R 7.41	R 7.41	R 0.00
	System input volume		k€/annum	14 550 000	14 259 000	-291 000
	Authorised Consum	ption	k€/annum	11 517 792	12 093 682	575 890
	Billed authorise	d	k€/annum	11 517 792	12 093 682	575 890
	Billed meter	ed	k€/annum	11 517 792	12 093 682	575 890
Sion	Billed unme	tered	k€/annum	0	0	0
ulat	Unbilled authori	sed	k€/annum	0	0	0
alcı	Unbilled me	tered	k€/annum	0	0	0
C e	Unbilled unr	netered	kℓ/annum	0	0	0
anc	Water losses		kl/annum	3 032 208	2 165 318	-866 890
Bal	Annarent losses	<u> </u>	k@/annum	515 475	368 104	000000
Iter	Real losses	,	k@/onnum	0 516 722	1 707 214	000 330
Ma	Redi IUSSES		KC/annum	2 310 733	1 /9/ 214	-000 090
	UARL		KC/annum	1 058 509	882 141	0
	Potential rea	al loss saving	Ke/annum	1 458 164	915 0/4	-866 890
	Revenue water		kt/annum	11 517 792	12 093 682	575 890
	Non-Revenue water		kť/annum	3 032 208	2 165 318	-866 890
	System input volume ur	nit consumption				
	litres / capita / day		ℓ/c/d	102	100	-2
	m ³ / household / mont	h	m ³ / hh / month	13	13	0
	m ³ / connection / mon	th	m ³ / conn / month	17	17	0
	Authorised unit consum	nption				
	litres / capita / day		ℓ/c/d	80	84	4
	m ³ / household / mont	h	m ³ / hh / month	10	11	1
	m ³ / connection / mon	th	m ³ / conn / month	14	14	0
	Water loss indicators					
6	UARL : Losses / conn	ection / day	ℓ / conn / day	42	35	-7
tors	CARL : Losses / conn	ection / day	ℓ / conn / day	99	70	-28
dica	Infrastructure Leakage	e Index (ILI)	-	2.38	2.04	0
l	Losses / km mains / d	av	m³ / km / dav	5.0	3.6	-1
LC6	Non-revenue water	· ,	%	20.8%	15.2%	-5.7%
Lma	Unbilled Consumption	1	%	0.0%	0.0%	0.0%
erfo	Water Losses		%	20.8%	15.2%	-5.7%
y Pé	Annarent losses		%	2 50/	13.2 /0 2 £0/	-1.0%
Ke	Apparent 105565		0/	J.J/0 17 20/	10.60/	-1.0%
	Water belence reduction	ataraata	/0	17.3%	12.0%	-4.1%
	Sustem input volume	i laigels	0/		2.00/	
	System input volume		%		-2.0%	
	Authorised Consum	iption	%		5.0%	
	Billed authorise	a	%		5.0%	
	Billed meter	ed	%		5.0%	
	Billed unme	tered	%		0.0%	
	Unbilled authori	sed	%		0.0%	
	Unbilled me	tered	%		0.0%	
	Unbilled unr	netered	%		0.0%	
/sis	Average monthly water	bill / connection	R / conn / month	R 20	R 20	R 0
naly	Estimated annual incom	ne	R / annum	R 16 501 916	R 16 501 916	R 0
st A.	Total water supply cost		R / annum	R 41 700 000	R 41 700 000	R 0
S	Net profit / loss		R / annum	-R 25 198 084	-R 25 198 084	RO
	Town and description		Source	MI/dav	m ³ /annum	million m ³ /annum
					in /unnum	

if d	Greater Tzaneen	Blue Drop 2011	15.00	5 475 000	5.475
e an pac	Letsitele	Blue Drop 2011	1.50	547 500	0.548
urc					0.000
r So					0.000
'atei eatn					
≥₽					
	Total		16.50	6 022 500	6.023

Current IWA Water Balance Diagram (million m ³ /annum)									
System Input Volume = 14.550	Authorised consumption = 11.518	Billed authorised = 11.518	Billed metered = 11.518	Revenue water = 11.518					
		Apparent losses = 0.515	Apparent losses = 0.515						
	Water losses = 3.032	Real Losses = 2.517	Real Losses = 2.517	Non-revenue water = 3.032					

Target IWA Water Balance Diagram (million m ³ /annum)									
System Input Volume = 14.259	Authorised consumption = 12.094	Billed authorised = 12.094	Billed metered = 12.094	Revenue water = 12.094					
	Water losses = 2.165	Apparent losses = 0.368 Real Losses = 1.797	Apparent losses = 0.368 Real Losses = 1.797	Non-revenue water = 2.165					
		Reduced Input Volume = 0.291							

WCWDM STRATEGY : Water Balance History

	Municipality Name	Greater Tz	aneen							
		Year ending	Jun-06	Jun-07	Jun-08	Jun-09	Jun-10	Jun-11	Jun-12	Jun-18
	Population		390 887	393 230	396 177	398 557	370 789	<u>393 036</u>	<u>392 426</u>	557 530
	Households		93 939	94 502	95 221	95 790	89 118	<u>94 465</u>	<u>92 138</u>	134 001
	Connections - met	ered	42 244	42 498	42 816	43 073	40 072	<u>42 477</u>	<u>45 025</u>	60 254
	Connections - Unme	etered	24 931	25 080	25 271	25 422	23 651	<u>25 070</u>	<u>26 575</u>	37 697
Data	Length of mains (km)	1 344	1 352	1 362	1 370	1 274	<u>1 100</u>	<u>1 166</u>	1 561
Input	System input volume	kl/annum	9 064 133	15 540 963	14 995 899	14 450 835	14 995 899	14 814 211	14 550 000	14 259 000
	Billed metered consumption	kl/annum	8 218 421	5 172 762	5 880 662	6 588 561	5 880 662	6 116 628	11 517 792	12 093 682
	Billed unmetered consumption	kl/annum	845 712	202 618						
	Unbilled metered consumption	kl/annum								
	Unbilled unmetered consumption	kl/annum								
tions	Revenue water	kl/annum	9 064 133	5 375 380	5 880 662	6 588 561	5 880 662	6 116 628	11 517 792	12 093 682
alcula	Non-Revenue water	kl/annum	0	10 165 583	9 115 238	7 862 274	9 115 238	8 697 583	3 032 208	2 165 318
ance C	Water Losses	kl/annum	0	10 165 583	9 115 238	7 862 274	9 115 238	8 697 583	3 032 208	2 165 318
er Bala	% Non-revenue w	ater	Check data	P 65.4%	陀 60.8%	P 54.4%	陀 60.8%	P 58.7%	陀 20.8%	P 15.2%
Wate	% Water Losse	S	No data	P 65.4%	陀 60.8%	P 54.4%	陀 60.8%	P 58.7%	P 20.8%	P 15.2%
ន	Input : Litres / capita	a / day	64 🥐	۴ 108	P 104	99 🥐	۴ 111	P 103	P 102	70 🖗
dicato	Input: m³ / household	/ month	8 🎙	۴ 14	P 13	P 13	۴ 14	P 13	P 13	9 🎙
nce in	Billed : Litres / capit	a / day	64 🥐	۴ 37	۴ 41	۴ 45	P 43	۴ 43	80 🦻	۶9 🥐
forma	Billed : m³ / household	l / month	8 ۴	۴ 5	۴ 5	6 প	۴ 5	۴ 5	۴ 10	8 🖗
ey per	% Population gro	wth	0.66%	0.60%	0.75%	0.60%	-6.97%	6.00%	-0.16%	41.85%
У	% Water demand g	rowth	961.04%	71.46%	-3.51%	-3.63%	3.77%	-1.21%	-1.78%	-3.75%
	Source of information		DWA NIS StatsSA NFC	DWA NIS StatsSA NFC	DWA NIS Estimated	DWA NIS StatsSA NFC	DWA NIS Estimated	DWA NIS Estimated		



WCWDM STRATEGY : Qualitative Scorecard

Municipality Name Greater Tzaneen

Introduction

The purpose of this section is to perform a qualitative evaluation of the municipality's water business. The objectives are as follows :

SWOT Analysis	External - Opportunities Positive external conditions which you don't control which you could take advantage of	External - Threats Negative conditions you don't control but could minimise their effects
Internal - Strengths Positive aspects under your control and on which you may wish to capitalise	Strengths and Opportunities (SO) – Strategies that use strengths to maximize opportunities.	Strengths and Threats (ST) – Strategies that use strengths to minimize threats.
Internal - Weaknesses Negative aspects under your control (to a large extent) which you could plan to improve	Weaknesses and Opportunities (WO) – Strategies that minimize weaknesses by taking advantage of opportunities.	Weaknesses and Threats (WT) – Strategies that minimize weaknesses and avoid threats.

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
1	INSTITUTIONAL REVIEW				1
1.1	Water and Sanitation department structure				
1.1.1	Is there an approved organogram for the Water and Sanitation Department?	There is an approved organogram in place. The organogram also includes staff for schemes that are run by Mopani DM.	0	Review the existing organogram and ensure that it incorporates WC/WDM personnel in consultation with the District.	1
1.1.2	What is the vacancy rate in the department and is it a problem?	There is a 60% vacancy rate including the schemes that are run by Mopani. Most of the vacancies are in O&M.	т	Engage with the District and advertise and fill the identified critical vacant posts. Engage with the Department of finance at the District Level to identify and explore possible funding options and budget requirements for the critical posts.	1
1.1.3	Does the department have the correct technical skills for the correct posts.	The skills are present in the municipality. There is a gap in terms of the technicians.	Т	Increase the number of technicians, and O&M capacity through new human resources and support it with WC/WDM training.	1
1.1.4	Is training and capacity building being done?	There is training done specifically for process controllers and on maintenance such as leak repair.	0	Institute a mandatory WC/WDM training programme for technical staff. Invest in team building and workshop sessions incorporating the councillors and municipal management to boost staff morale.	2
1.1.5	Are there sufficient support structures ito vehicles, equipment, materials etc.?	There is enough material and vehicles. The response time is also very good.	s	Continue to allocate an adequate budget for the critical spares. Allocate a specific person who will be responsible for expediting equipment orders and managing quality control in terms of the procurement process.	2
ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
-------	---	---	------	--	----------
1.1.6	Does the municipality own any water loss control equipment such as loggers, listening sticks, etc.?	sticks, etc.? The municipality currently has no water loss equipment. There are plans to procure these in future.		It is recommended that loggers and simple leak detection equipment be purchased to improve water loss monitoring and management in the system.	3
1.2	Municipal support				
1.2.1	Describe the working relationship with other departments such finance, planning, housing etc.?	The relationships are very good.		Establish a NRW steering committee comprising representatives from the technical, communications and finance departments to ensure that communication and access to information remains efficient.	1
1.2.2	Are the politicians supporting the department?	The politicians are very supportive and they understand the water business.	0	Undertake a councillor WC/WDM induction programme to capitalise on the existing relationship and build a communication bridge between the municipality and the customers.	2
1.3	Public Private Partnerships				
1.3.1	Is there any major industrial or institutional role player in the area and is there co-operation?	No major industries.			
1.3.2	If yes, what does the co-operation involve and can it be expanded?				
1.4	Legislation and bylaws				
1.4.1	Does the municipality have a customer service charter?	No customer services charter is currently in place but one is being drafted.	o	Develop a customer service charter to ensure the customers are aware of the municipalities commitment and their responsibilities as consumers.	2
1.4.2	What is the status and age of the existing bylaws and do they address water loss management?	There are bylaws in place from the District.			
1.4.3	Are bylaws enforced and if not, why not?	The bylaws are not really being enforced. The greatest challenge is in the rural areas.	0	Develop partnerships with the credit control and legal departments as well as the SAPS and put appropriate bylaw enforcement mechanisms in place	2
1.4.4	What is the status and age of Water Services Development Plan?				
2	FINANCIAL REVIEW				
2.1	Financial Department				
2.1.1	What is your opinion of the Finance Department's ability to perform metering and billing	The finance department is doing well on the metering and billing. The exception reports are forwarded by the billing department to technical.	0	Improve communication and access to information between the technical and finance department through scheduled monthly team meetings in order to fully utilise this resource.	1
2.1.2	Is training and capacity building being done?	uncertain. There is a contractor appointed for metering and billing. The AMR system is being used.	ο	Plan a WC/WDM workshop for the finance personnel and meter readers to facilitate an improved understanding of the technical issues and information requirements.	2

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
2.1.3	What is the state of the municipal metering and billing system?	Very good.	S	Obtain billed metered consumption from the finance department on a monthly basis and monitor water sales.	1
2.1.4	What is your primary source of funding?	Internal Revenue and Grant funding for Mopani.	0	Focus on improving cost recovery to continuously reduce dependency on grant funding.	2
2.2	Tariffs				
2.2.1	Who prepares the water tariffs and what is it based on?	The finance department prepares the tariffs and the technical department assist.	0	Obtain National Treasury tariff guidelines and review tariffs.	1
2.2.2	What is the tariff structure and does it promote WCWDM?	There is a step tariff in place. The lowest tariff is 51c/kl and highest is R4/kl and it does not promote WDM. Only indigents get the free basic allocation.	Т	Review the current tariff structure. Institute a rising block tariff sufficiently differentiated in cost at each level to promote WC/WDM with the highest tariff at least double the lowest tariff.	1
2.2.3	Is the water supplied considered affordable by the customers?	The consumers sometimes complain that the tariff is high.	Т	Review the tariffs and ensure that they become affordable particularly for the efficient and low income water users.	1
2.3	Meter Reading and Billing				
2.3.1	Who performs the water meter readings, frequency and accuracy?	The external service provider is doing this and the accuracy and frequency is good.	0	Annually monitor the frequency of meter reading and customer complaints of inaccurate billing to determine the effectiveness of the meter readers.	1
2.3.2	Are the meter readers trained and can they report leakage when encountered on site?				
2.3.3	Is the water bill understandable and informative?				
2.4	Credit control				
2.4.1	Is credit control being implemented and by whom?				
2.4.2	What is the current level of non-payment?	The levels of non payment are approximately 20% in town and about 70% in Nkownakowa.	0	Focus on promoting payment for services in the township areas through the councillors and education and awareness.	1
3	SOCIAL REVIEW		-		
3.1	Customer profile				
3.1.1	Describe the general consumer profile i.e. Income levels, indigence, unemployment, literacy	The indigent levels are low. The free basic allocation is 12kl and there are 3000 registered indigents.	0	Focus on educating the indigent population on efficient water use and the importance of the free basic allocation as well as its limitations.	1
3.1.2	Describe the relationship between customers and the municipality and reasons?	The relationship with the consumers is good.	0	The existing relationship should be improved on and utilised to increasingly promote water conservation.	2
3.2	Customer awareness				
3.2.1	Are consumers informed regarding the value of water?	The consumers value water and are well informed.	0	Continue to promote water efficiency. Utilise this positive community attribute and encourage the installation of water efficient devices and leak repair to further decrease water losses.	2

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
3.2.2	What is the level of leakage reporting by the community and what method do they use?	The consumers report leakage via the landline.	0	Ensure that the customer care line is continuously publicised to further encourage reporting of leakage.	3
3.2.3	What are the most prominent consumer behavioural challenges encountered by the municipality?	nges encountered by the municipality? Unauthorised connections are a big problem in the rural areas and vandalism due to shortage of services and new settlements being established.		The community awareness campaign should be tailored to address these problems. The councillors should be encouraged to make these issues an agenda at all public metering held in the different wards.	2
3.2.4	Is xeriscaped gardening and rain water harvesting encouraged?	Not yet. Grey water reuse is however promoted.	0	As part of a community awareness campaign, encourage consumers to harvest rain water and utilise it for garden irrigation and cleaning to reduce the demand for potable water and to undertake xeriscaped gardening where practicable.	2
3.2.5	Are radio campaigns, bill board, pamphlets, informative billing used to inform and educate customers?	No community awareness campaign has taken place. Water saving tips have periodically been placed on the municipal boards.	0	Develop simple visual material in the form of pamphlets which can be used to educate consumers on efficient water use. Periodically publicise water tips on local radio stations and newspapers.	2
3.3	Schools awareness				
3.3.1	Number of primary and secondary schools?				
3.3.2	Frequency and scope of schools awareness campaigns?				
3.3.3	Are goals and objectives monitored and controlled?				
3.4	Customer Care Centre				
3.4.1	Does the municipality have a CCC and who operates it?	There is no customer care centre in the LM but there is one for the DM. People generally call the municipal land line or come to the municipality directly to report complaints or leakage. Most (80%) of the calls to the LM are returned immediately.	0	Obtain an electronic system to capture and monitor the queries referred and to track the resolution of the queries and leak reports.	2
3.4.2	How and to whom are billing queries referred?				
3.4.3	To whom are the leak reports referred and do consumers have confidence in the reporting system?				
4	TECHNICAL REVIEW				
4.1	Measurement and control				
4.1.1	Is the system input volume measured, monitored and controlled?	The SIV is monitored and controlled and monthly reports are generated.	S	Read bulk meters on a monthly basis and continue to monitor input volumes.	1
4.1.2	Is the water supply system sectorised into zones and districts?	The areas is not sectorised yet but this will be done in the next financial year.	W	The water supply system must be sectorised into manageable sized areas to allow for improved monitoring.	1
4.1.3	Are the supply to the zones and districts metered?				

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
а	Is the system monitored through a telemetry system?	There is an approved budget for installing telemetry for the reservoirs. Only the WTW has a telemetry system.	Т	Obtain an appropriate real time telemetry system to improve the monitoring of the network.	1
4.1.5	What is the Frequency and detail of your water balance calculation?	No water balance calculations are conducted. This only takes place during the blue drop audits.	w	Develop an NRW water balance which must be updated on a monthly basis to monitor water losses.	1
4.1.6	Are minimum night flows, consumption trends and logging used to monitor the system?	No.	0	Obtain and install logging equipment periodically on the zone meters once they have been installed and conduct MNF analysis to determine leakage levels and areas experiencing high or low pressures.	3
4.1.7	Are monthly management reports prepared and key performance indicators measured?	Some management reports are generated specifically related to the SIV and metered consumption.	s	Consolidate the available data from the bulk meters and department of finance and compile a monthly NRW report with all the relevant KPIs.	1
4.2	Physical leakage				
4.2.1	What is the average age of the network, pipe material, replacement programme?	The pipes are approximately 20 years old. No replacement programme is in place yet due to lack of funds.	т	Set aside 5% of the CAPEX budget for the replacement of the network. Engage with the District and explore funding options for the infrastructure luoardes including ACIP funding.	1
4.2.2	Number of burst pipes reported and repaired per week / month and the average response time?	3 pipe bursts a week.	w	Ensure that pipe bursts are repaired within a 48 hour period.	1
4.2.3	What is the primary cause of burst pipes?	The network is very old.	Т	Allocate a proper budget for replacement and refurbishment. Budget a minimum of 5% of the infrastructure value for this purpose to reduce the risk of system failure. Also consider implementing pressure management in areas with high burst frequencies	1
4.2.4	Are active leak detection programmes conducted?	No.	0	Undertates active leak detection on the network on an annual basis. Select appropriate areas for the leak detection exercise based on the district meter readings and monitoring process once sectorisation has taken place. As a first phase, focus on visual leak detection	3
4.2.5	How often and for how long do reservoirs overflow?	Once in 3 months.	0	Obtain an appropriate real time telemetry system to improve the monitoring of the reservoirs and the network	2
4.2.6	Are water losses from treatment processes (backwash, etc.) monitored and minimised?				
4.2.7	Is leakage on private properties a problem and if so, why?	There may be a problem of leakage but its rare especially in Tzaneen.	0	Undertake an internal leak audit in critical areas to accurately determine the extent of water losses and do a cost benefit analysis to assess the merit of periodically performing leak repairs for indigent consumers.	2
4.2.8	Are leaks on indigent private properties repaired and removal of wasteful devices encouraged?				
4.3	Pressure management and control valves				

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
4.3.1	What is the average and maximum system pressure?	3-9 bar pressure.	S	Maintain the satisfactory operating pressure and ensure that operating pressures never exceed the DWA regulatory standard of 9 bar.	3
4.3.2	Is basic or advanced pressure management being implemented?	There is some pressure management taking place in Tzaneen.	0	Consider undertaking logging in areas experiencing high burst frequencies and monitor on a monthly basis. If the pressures are high for the area or exceed the regulations stipulated 9 bar, install pressure reducing valves to regulate the pressures more effectively. Continue to investigate the scope for the expansion of pressure management in the area to reduce the losses further.	2
4.3.3	Are control valves pro-actively being maintained to prevent overflowing reservoirs?	The control valves are proactively maintained. Maintenance is conducted on fire hydrants once a year.	S	Undertake an annual control valve audit to assess the condition of the control valves and ensure that they are proper working order.	2
4.4	Consumer metering				
4.4.1	Are domestic and non-domestic consumers metered and which type of meter is used?	All the consumers are metered in Tzaneen. In Nkowankowa only 25% are not metered and billed.	0	Meter and bill 100% of non domestic connections as a priority and increasingly meter and bill the domestic consumers where practicable to increase revenue water.	1
4.4.2	What is the condition, age and accuracy of water meters?	In Tzaneen, the meters are less than 10 months old, the brass meters are being replaced with plastic meters.	S	Continue to budget and implement meter replacement programmes particularly for bulk and non domestic consumers.	1
4.4.3	Are the top consumers pro-actively monitored on a monthly basis?	The top consumers are monitored on a monthly basis.	S	Continue to monitor the top consumers. Undertake a top consumer audit and ensure that all connections are metered and billed.	1
4.4.4	Describe the water quality and its impact on consumer water meters?	The water quality sometimes impacts on the meters in Nkowankowa. This is mostly due to maintenance issues.	т	Consider installing a water treatment package plant in selected areas with bad water quality to improve the services to those areas. Metering and billing can then be effected to recover the costs.	2
4.4.5	What is the prevalence and control of illegal connections?	There is a high prevalence of illegal connections in the rural areas.	т	Actively monitor illegal connections and periodically undertake an audit on the meters. This can be conducted by the meter readers.	1
4.5	Management information				
4.5.1	Does the Municipality have an asset register and asset management programme?	There is a comprehensive asset register which is kept by the District.	S	Review the asset register system in place. Maintain and update the asset register on an annual basis. Ensure that the asset register provides critical technical information such as the age, value and replacement date of the assets.	3
4.5.2	What is the status and age of as-built drawings?	There are as built drawings which are in electronic format.	S	Ensure that there are digital drawings for the whole network and update them on an annual basis.	3

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY

Summary

SWOT Analysis	Helpful	Harmful
Internal factors (Staff, infrastructure, tools, equipment)	Approved organogram in place Monitoring of top consumers Sufficient support structures for O&M Bulk meters in place which are read monthly Control valves proactively monitored Meter replacement programme in place As built drawing for the network in electronic format	High vacancy rate No water loss equipment No proactive monitoring of water losses in zones No Sectorisation and zone metering High pipe burst frequency Overflowing reservoirs
Internal factors (Politics, finance, consumers, economics)	Good relationship with finance Consumers are cognisant of the value of water Good political support Good relationship with consumers	Old infrastructure High prevalence of illegal connections in the rural areas Uncertain levels of leakage on private properties Inadequate tariffs

WCWDM STRATEGY : Quantitative Scorecard

Municipality Name Greater Tzaneen

Introduction

The purpose of the Water Conservation / Water Demand Management (WC/WDM) Scorecard is to ascertain the status quo of WC/WDM and evaluate the potential for WC/WDM measures to be implemented in these systems. The scorecard is also designed to enable the Regulator (Department of Water Affairs) to assess the current situation regarding losses and levels of wastage in all water supply systems countrywide. The scorecard consists of 25 multiple choice questions with each question getting scored from 0 to 4. The Regulator and WSA can track progress with each year the scorecard gets completed. Each question ends with an audit requirement which indicates what will be required by the Regulator should the questionnaire be audited. It also provides an indication on what is required in terms of each of the measures.

Completed by	P Shilowa		
Date	12-Jun		Average
1. Development of Standard Water Balance	3		3
2. Pressurised supply to all consumers 100% of time	3		3
3. Residential Metering System	3		3
4. Non Residential Meters (Commercial, Industrial and Institutional)	4		4
5 Effective Billing System & Informative Billing	4		4
	•		
6 Network (Leokage) Complainte System	4		4
o. Network (Leakage) complaints system	4		4
7. Dillion and Materian Complete Contain			
	4		4
8. Asset Register for Water Reticulation System	4		4
9. Asset Management - Capital Works	0		0
		_	
10. Asset Management - Operations and Maintenance	0		0
11. Dedicated WDM support	0		0
12. Active Leakage Control	0		0
13. Effective Sectorisation	0		0
14. Effective Bulk Meter Management	0		0
15 Effective Zone Meter Management and Night Flow Analysis	0		0
	v		
16 Pressure Management and Maintenance of Pressure Peducing Values	0		0
IV. I TESSUTE Management and Mantenance OF FIESSULE REDUCING VALVES	0		0
47. As Duilt Drawings of Dulls and Dation left and for the start	•		•
17. As-Built Drawings of Buik and Reticulation Infrastructure	2		2
18. Schematic Layout of Water Infrastructure	4		4
			ł

Date	12-Jun				Average
19. Regulations and Bylaws	4				4
	-	-		-	
20. Tariffs	4				4
21. Technical Support to Customers	0				0
	-	-		-	
22. Removal of Unlawful Connections	0				0
	-	-		-	
23. Community Awareness and Education Programmes	1				1
24. Schools Awareness and Education Programmes	0				0
25. Newspaper & radio articles plus posters and leaflets for distribution	3				3
Total score (maximum 100)	47	0	0	0	47



WCWDM STRATEGY AND BUSINESS PLAN : BUDGET AND CASH FLOW

Municipality name Greater Tzaneen

COSTS										
	Item	Unit	Quantity / year	Rate	Year 1	Year 2	Year 3	Year 4	Year 5	Total
INSTITUTIONAL / LEGISLATIVE INTERVENTIONS										
Institutional re	view:				100%					100%
CAPEX	Review organogram and fill vacancies	Sum	1	R 200 000	R 200 000	R 0	R 0	R 0	R 0	R 200 000
OPEX		Sum			R 0	R 0	R 0	R 0	R 0	R 0
Training and e	education :				50%	50%				100%
CAPEX	Not applicable	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Assume one training course / employee / annum	No	15	R 5 000	R 75 000	R 75 000	R 75 000	R 75 000	R 75 000	R 375 000
Customer cha	rter, policy, bylaws :						100%			100%
CAPEX	Review bylaws on 5 year cycles	Sum	1	R 200 000	R 0	R 0	R 200 000	R 0	R 0	R 200 000
OPEX	Enforce bylaws	Sum	1	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 500 000
FINANCIAL I	NTERVENTIONS									
Effective meter	ering and billing :				50%	50%				100%
CAPEX	Perform meter audit	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Ensure proper metering and billing of all consumers	No	89 831	R 100	R 8 983 100	R 8 983 100	R 8 983 100	R 8 983 100	R 8 983 100	R 44 915 500
Water tariffs :				•	50%	•	50%		•	100%
CAPEX	Review water tariffs	Sum	1	R 200 000	R 100 000	R 0	R 100 000	R 0	R 0	R 200 000
OPEX	Not applicable	Sum		R 0	R 0	R 0	R 0	R 0	R 0	R 0
Informative bi	lling :			<u>.</u>	50%	50%		<u>.</u>		100%
CAPEX	Improve invoice to show monthly consumption	Sum	1	R 200 000	R 100 000	R 100 000	R 0	R 0	R 0	R 200 000
OPEX	Distribute information with bill	Sum	89 831	R 120	R 10 779 720	R 53 898 600				
					-	·				
SOCIAL INTE	RVENTIONS									
Consumer A	wareness Campaign :				20%	20%	20%	20%	20%	100%
CAPEX	Install bill boards, design pamphlets, radio campaigns	Sum	89 831	R 120	R 2 155 944	R 10 779 720				
OPEX	Target households on monthly basis with awareness cam	No	89 831	R 60	R 5 389 860	R 26 949 300				
Consumer H	elp and Support Desk :				100%			<u>.</u>		100%
CAPEX	Improve existing help-desk to provide one-stop service	Sum	1	R 200 000	R 200 000	R 0	R 0	R 0	R 0	R 200 000
OPEX	Maintain help-desk	Sum	1	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 500 000
Schools awa	reness :				20%	20%	20%	20%	20%	100%
CAPEX	Prepare schools competition, awareness, retrofit	No	27	R 20 000	R 108 000	R 108 000	R 108 000	R 108 000	R 108 000	R 540 000
OPEX	Monthly schools awareness campaign	No	27	R 2 000	R 54 000	R 54 000	R 54 000	R 54 000	R 54 000	R 270 000

TECHNICAL IN	ITERVENTIONS									
Bulk metering	:				50%	50%				100%
CAPEX	New meter installations required	No		R 50 000	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Maintenance of existing bulk meters	No	10	R 1 000	R 10 000	R 10 000	R 10 000	R 10 000	R 10 000	R 50 000
Sectorisation :					50%	50%		·	-	100%
CAPEX	Setup of new DMA / PMAs	No	5	R 50 000	R 125 000	R 125 000	R 0	R 0	R 0	R 250 000
OPEX	Maintenance of DMA / PMAs including step testing	No	5	R 25 000	R 125 000	R 125 000	R 125 000	R 125 000	R 125 000	R 625 000
Active Leakage	e Control :			·	50%	50%	-			100%
CAPEX	Not applicable	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Fix all visible and reported leaks	No	1 370	R 1 000	R 1 370 000	R 1 370 000	R 1 370 000	R 1 370 000	R 1 370 000	R 6 850 000
Valve audits				·	20%	20%	20%	20%	20%	100%
CAPEX	Locate, clean, repair, document network valves	No	5 480	R 4 000	R 4 384 000	R 4 384 000	R 4 384 000	R 4 384 000	R 4 384 000	R 21 920 000
OPEX	Maintain network valves	No	1 096	R 1 000	R 1 096 000	R 1 096 000	R 1 096 000	R 1 096 000	R 1 096 000	R 5 480 000
Leak and loggi	ing equipment :				25%	25%	25%	25%		100%
CAPEX	Procure basic WDM equipment	Sum	2	R 20 000	R 10 000	R 10 000	R 10 000	R 10 000	R 0	R 40 000
OPEX	Not applicable	Sum			R 0	R 0	R 0	R 0	R 0	R 0
Telemetry :						50%	50%			100%
CAPEX	Install telemetry sites	No		R 15 000	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Maintain telemetry sites	No		R 1 500	R 0	R 0	R 0	R 0	R 0	R 0
Retrofitting an	d removal of wasteful devices :				20%	20%	20%	20%	20%	100%
CAPEX	Retrofit government buildings, schools, etc.	No	17 966	R 1 000	R 3 593 240	R 17 966 200				
OPEX	Not applicable	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
Mains replacer	nent :				20%	20%	20%	20%	20%	100%
CAPEX	Replace critical leaking mains	km	27.4	R 100 000	R 548 000	R 548 000	R 548 000	R 548 000	R 548 000	R 2 740 000
OPEX	Not applicable	km		R 0	R 0	R 0	R 0	R 0	R 0	R 0
Pressure mana	agement :				50%	50%				100%
CAPEX	New pressure management installations	No	4	R 75 000	R 150 000	R 150 000	R 0	R 0	R 0	R 300 000
OPEX	Maintain pressure management installations	No	4	R 5 000	R 20 000	R 20 000	R 20 000	R 20 000	R 20 000	R 100 000
Control valve r	nanagement :				50%	50%				100%
CAPEX	New control valve installations	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Maintain all control valve installations	No		R 5 000	R 0	R 0	R 0	R 0	R 0	R 0
Consumer met	ering :				20%	20%	20%	20%	20%	100%
CAPEX	Replacement of old water meters	No	8 983	R 1 200	R 2 155 944	R 10 779 720				
OPEX	Replacement of broken and cycled water meters	No	4 492	R 1 200	R 5 389 860	R 26 949 300				
Top consumer	audit :				20%	20%	20%	20%	20%	100%
CAPEX	Audit and retrofit non domestic consumers	No	4 492	R 10 000	R 8 983 100	R 44 915 500				
OPEX	Maintain non domestic consumers installations	No	4 492	R 500	R 2 246 000	R 11 230 000				
GIS / CAD syst	iem :				50%	50%				100%
CAPEX	Setup CAD/ GIS system	Sum	1	R 200 000	R 100 000	R 100 000	R 0	R 0	R 0	R 200 000
OPEX	Maintain CAD / GIS system	Sum	1	R 200 000	R 200 000	R 200 000	R 200 000	R 200 000	R 200 000	R 1 000 000
Management I	nformation System :									100%

CAPEX	Setup basic MIS system to support WDM	Sum	1	R 200 000	R 100 000	R 100 000	R 0	R 0	R 0	R 200 000
OPEX	Maintain MIS system	Sum	1	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 500 000
Water loss m	onitoring and audits:	•			100%	·				100%
CAPEX	Perform proper analysis of distribution network	Sum	1	R 200 000	R 200 000	R 0	R 0	R 0	R 0	R 200 000
OPEX	Perform ad hoc analysis to monitor interventions	Sum	1	R 20 000	R 20 000	R 20 000	R 20 000	R 20 000	R 20 000	R 100 000
	ltem	Туре			Year 1	Year 2	Year 3	Year 4	Year 5	Total
TOTAL COST	ſS									
Institutional		CAPEX			R 200 000	R 0	R 200 000	R 0	R 0	R 400 000
		OPEX			R 175 000	R 875 000				
		TOTAL			R 375 000	R 175 000	R 375 000	R 175 000	R 175 000	R 1 275 000
Financial		CAPEX			R 200 000	R 100 000	R 100 000	R 0	R 0	R 400 000
		OPEX			R 19 762 820	R 98 814 100				
		TOTAL			R 19 962 820	R 19 862 820	R 19 862 820	R 19 762 820	R 19 762 820	R 99 214 100
Social		CAPEX			R 2 463 944	R 2 263 944	R 11 519 720			
-		OPEX			R 5 543 860	R 27 719 300				
-		TOTAL			R 8 007 804	R 7 807 804	R 39 239 020			
Technical		CAPEX			R 20 349 284	R 20 149 284	R 19 674 284	R 19 674 284	R 19 664 284	R 99 511 420
		OPEX			R 10 576 860	R 52 884 300				
		TOTAL			R 30 926 144	R 30 726 144	R 30 251 144	R 30 251 144	R 30 241 144	R 152 395 720
Total		CAPEX			R 23 213 228	R 22 513 228	R 22 238 228	R 21 938 228	R 21 928 228	R 111 831 140
		OPEX			R 36 058 540	R 180 292 700				
		TOTAL			R 59 271 768	R 58 571 768	R 58 296 768	R 57 996 768	R 57 986 768	R 292 123 840
					R 59 271 768	R 58 571 768	R 58 296 768	R 57 996 768	R 57 986 768	
BENEFITS										
	Item	Unit			Year 1	Year 2	Year 3	Year 4	Year 5	Total
CHANGE IN C	CONSUMPTION									
Reduced input	t volume				20%	40%	60%	80%	100%	300%
Volume		m ³ /annum	291 000		58 200	116 400	174 600	232 800	291 000	873 000
Amount		R / annum	291 000	R 3.50	R 203 700	R 407 400	R 611 100	R 814 800	R 1 018 500	R 3 055 500
Increased reve	enue water				20%	40%	60%	80%	100%	300%
Volume		m ³ /annum	575 890		115 178	230 356	345 534	460 712	575 890	1 727 669
Amount		R / annum	575 890	R 7.00	R 806 245	R 1 612 491	R 2 418 736	R 3 224 982	R 4 031 227	R 12 093 682
Total		R / annum			R 1 009 945	R 2 019 891	R 3 029 836	R 4 039 782	R 5 049 727	R 15 149 182

Payback period - years 19.3

WC/WDM Projection summary and targets

Municipality name Greater Tzaneen

Water Demand projection	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 1.0% WDM Scenario							14.53	14.65	14.77	14.89	15.01	15.14
Less 3.0% WDM Scenario							14.48	14.55	14.62	14.69	14.76	14.83
Less 5.0% WDM Scenario							14.43	14.45	14.47	14.49	14.51	14.53
Actual Demand			15.54	15.00	14.45	15.00	14.81	14.55				
High population No WDM							14.55	14.70	14.84	14.99	15.14	15.29
Licenced abstraction	14.55	14.55	14.55	14.55	14.55	14.55	14.55	14.55	14.55	14.55	14.55	14.55

Savings	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 1.0% WDM Scenario							0.02	0.05	0.07	0.10	0.13	0.15
Less 3.0% WDM Scenario							0.07	0.15	0.22	0.30	0.38	0.46
Less 5.0% WDM Scenario							0.12	0.24	0.37	0.50	0.63	0.76
Actual savings							-0.26					

% Reduction	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 1.0% WDM Scenario							0.17%	0.33%	0.50%	0.67%	0.83%	1.00%
Less 3.0% WDM Scenario							0.50%	1.00%	1.50%	2.00%	2.50%	3.00%
Less 5.0% WDM Scenario							0.83%	1.67%	2.50%	3.33%	4.17%	5.00%

Year / Year % Growth	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 1.0% WDM Scenario								0.8%	0.8%	0.8%	1.7%	1.7%
Less 3.0% WDM Scenario								0.5%	0.5%	0.5%	1.0%	1.0%
Less 5.0% WDM Scenario								0.2%	0.1%	0.1%	0.3%	0.3%
Actual Demand				-3.5%	-3.6%	3.8%	-1.2%	-1.8%				
High population No WDM								1.0%	1.0%	1.0%	1.0%	1.0%

Key Performance Indicators	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Population (DWA, NIS)	388 340	390 887	393 230	396 177	398 557	370 789	393 036	392 426				
Households (DWA, NIS)	93 324	93 939	94 502	95 221	95 790	89 118	94 465	92 138				
l/c/d	0	0	108	104	99	111	103	102				
m3/hh/month	0	0	14	13	13	14	13	13				
Demand MI/day	0	0	43	41	40	41	41	40				





WCWDM STRATEGY : RPMS Compliance

Municipality name Greater Tzaneen

Key questions from the Regulatory Performance Measurement System (RPMS) related to WC/WDM

KPI		ID	WSA Value
KPI 1 – <i>I</i>	Access to Water		
KPI 2 – /	Access to Sanitation		
KPI 3 – <i>I</i>	Access to Free Basic Water		
	Total poor households receiving Free Basic Water for last financial year	ID:012	
	Total poor households	ID:013	
KPI 4 – <i>I</i>	Access to Free Basic Sanitation		
	Total poor households receiving Free Basic Sanitation for last financial year	ID:014	
	Total poor households	ID:013	
KPI 5 – [Drinking Water Quality		
KPI 6 –V	/astewater Quality		
KPI 7 - C	sustomer Services Standards		
Compon	ent 1 – Service Interruptions		
	Total number of Service interruptions in the last financial year	ID:034	
	Number of interruptions in continuous service to consumers, where interruption for a single incident was greater than 24h	ID:033	
Compon	ent 2 – CRM Systems		
	Does the WSA have a customer Charter	ID:036	
	Does the WSA have a customer service centre	ID:035	
	Is there a system to manage customer queries and log faults	ID:038	
	Does the incident tracking system escalate complaints if not responded to within a prescribed time?	ID:037	
KPI 8 - Iı	istitutional Effectiveness		
Compon	ent 1 - Institutional Effectiveness		
	Completed WSDP is approved by Council for the last financial year?	ID:039	
	Required policies are in place and approved by Council?	ID:040	
	Required bylaws are in place and approved by Council?	ID:041	
	Contracts and Service level agreements in place with all appropriate service delivery role-players (WSPs, internal etc.)	ID:042	
	The WSA monitors the KPIs defined by the contract or SLA?	ID:043	
Compon	ent 2 - Water Services Staff Effectiveness		
	Total Water Services staff costs for the last financial year	ID:045	
	Total cost of water and sanitation provision for the last financial year including interest and depreciation (expenditure)	ID:046	
	Total budgeted for water services staff according to the approved organogram for the last financial year	ID:078	
Compon	ent 3 - Grant Funding Effectiveness		
	Total grant funding allocation received for the last financial year	ID:048	
	Total grant funding allocation spent for the last financial year	ID:047	
Compon	ent 4 - WSA Annual Report		
	WSA annual report submitted to Minister	ID:077	
Compon	ent 5 - % Filled Posts on Organogram		
	Total number of posts on Council-approved organogram for the last financial year for water services staff	ID:080	
	Total number of posts filled on the approved water services organogram in the last financial year	ID:079	

KPI 9 - Financial Performance		
Component 1 – Financial Integrity		
Is WSA ring-fenced? (Separate legal entity=3, Separate accounting entity=2, Partially ring-fenced=1, Not ring-fenced at all=0)	ID:049	
Audit report evaluation. (Unqualified=4, Qualified=3, Adverse=2, Disclaimer=1, No report=0)	ID:050	
Component 2 – Average Debtor Days		
Water Services sales income for the last financial year (water/sanitation)	ID:052	
Total outstanding customer/consumer debt for water and sanitation for the last financial year	ID:051	
Component 3 – Revenue Collection Effectiveness		
Water Services sales income for the last financial year (water/sanitation)	ID:052	
Water Services billed income actually received from consumers for last financial year	ID:053	
Component 4 – Average Creditor Days		
Total bulk water purchases for the last financial year	ID:055	
Total bulk water accounts outstanding for the last financial year	ID:054	
Component 5 – Financial Sustainability		
Total water and sanitation income for the last financial year	ID:056	
Total cost of water and sanitation provision for the last financial year including interest and depreciation (expenditure)	ID:046	
Component 6 – Financial Effectiveness		
Total outstanding customer/consumer debt (after provisions) for water and sanitation for the last financial year	ID:051	
Total provision for doubtful debt for water and sanitation for the last financial year	ID:082	
KPI 10 Strategic Asset Management		
Component 1 - Capital Spent on Rehabilitation and Replacement		
Total capital budget (Water and Sanitation) in the last financial year	ID:063	
Total capital spent on refurbishment and replacement in the last financial year	ID:062	
Component 2 - Asset Management Effectiveness		
Asset management plan status	ID:057	
Asset register status	ID:058	
Asset management system is electronic	ID:059	
Component 3 – O&M Expenditure		
Total spent on O&M/Annual maintenance cost (Water and Sanitation) in the last financial year	ID:060	
Replacement value of assets (water services infrastructure)	ID:061	
Component 4 – Replacement Saving		
Depreciation value for the last financial year (Water and Sanitation infrastructure)	ID:065	
Contribution to asset replacement fund for the last financial year. (Water and Sanitation)	ID:064	
Component 5 – Asset Register Monitoring		
Asset register field monitored: Date acquired	ID:066	
Asset register field monitored: Estimated remaining life of asset	ID:068	
Asset register field monitored: Replacement value of asset	ID:070	
Asset register field monitored: Purchase cost of asset	ID:069	
Asset register field monitored: Description of asset (Yes/No)	ID:067	
KPI 11 Water Demand Management		
System input volume (external sources) for the last financial year	ID:121	
System input volume (own sources) for the last financial year	ID:122	
Total billed metered water consumption (volume) for the last financial year	ID:071	
Total billed unmetered water consumption (volume) for the last financial year	ID:074	
Total unbilled metered water consumption (volume) for the last financial year	ID: 073	
I otal unbilled unmetered water consumption (volume) for the last financial year	ID: 123	
ADDITIONAL QUESTIONS FOR WATER USE EFFICIENCY		

Water Conservation and Water Demand Management plan		
Installation of water efficient devices		
Repair of leaks		
Measurement or control of water supplied		
Pressure management		
Additional KPI : Tariff Data		
Which of the listed elements are taken into account when you determine your tariff? Indicate from the list provided	ID: 201	
Total amount of subsidies allocated to water for the next financial year	ID: 202	
Total projected cost of water provision for the next financial year	ID: 203	
Does your tariff recognise the difference between levels of service (according to Regulation 4 under s10 of the Water Services Act)?	ID: 204	
Does your tariff recognise the difference between socio-economic status of customers (according to s10 of the Water Services Act)?	ID: 205	
Do you charge a rising block tariff?	ID: 206	
How many blocks are in your tariff structure?	ID: 207	
What is your approved standard tariff? (Basic levy)	ID: 208	
What are the actual 2010/2011 tariffs for the following consumer categories?	ID: 209	
Do you reflect your tariff structure on your bill?	ID: 210	
What are the quantities of water supplied to the following consumer categories (annually)?	ID: 211	
What is the unit number of consumers served with water in each consumer category?	ID: 212	
Do you have a seasonal tariff in your WSA?	ID: 213	
Does your tariff include a fixed charge?	ID: 214	
If a fixed charge is levied, do you subsidise the FBW?	ID: 215	
What other sources of water services revenue (other than tariffs) does your WSA have? Indicate sources on the list provided	ID: 216	
Total annual water services surplus / deficit	ID: 217	



water affairs

Department: Water Affairs REPUBLIC OF SOUTH AFRICA

Department of Water Affairs

Water Demand Management Strategy and Business Plan

for Maruleng Local Municipality

May 2013

WCWDM STRATEGY AND BUSINESS PLAN: Signature Page

Title :	Development of a Water Con Local Municipality	Development of a Water Conservation and Water Demand Management Strategy and Business Plan for Maruleng Local Municipality								
Authors :	WA Wegelin, Z Siqalaba, N Z	VA Wegelin, Z Siqalaba, N Zondo								
Study Name:	Development of a Reconcilia	evelopment of a Reconciliation Strategy for the Luvuvhu and Letaba Water Supply System								
Status of Report :	inal draft									
Consultants :	WRP Consulting Engineers	WRP Consulting Engineers (Pty) Ltd								
Approved for Consultants :	Study leader	Study leader WA Wegelin, PrEng								
	Position	Name	Signature	Date						
Municipality	Maruleng Local Municipality									
Approved for municipality :										
	Position	Name	Signature	Date						
Department of Water Affairs	Limpopo Region									
Approved for Regional Office :										
	Position	Name	Signature	Date						
Department of Water Affairs	Head Office									
Approved for Head Office										
	Position	Name	Signature	Date						

WCWDM STRATEGY AND BUSINESS PLAN: Contact details

Province	Limpopo	WSA	No
Municipal Code	LIM335	Category	B4
District Municipality	Mopani		
Municipality	Maruleng		
Settlements	Hoedspruit		

Information provided by							
Date	24/04/2012						
Contact person	Mr Absalom Magadani						
Position	Water Services Manager						
Telephone	015 793 2409 Cell 082 569 4309						
E-mail	magadania@maruleng.gov.za						
Study team contact							
Company	WRP Consulting Engineers						
Adress	PO Box 1522, Brooklyn Sqaure, 0075						
Contact person	Mr Willem Wegelin						
Telephone number	012 346 3496	Cell number	083 4477 999				
E-mail	willemw@wrp.co.za						

Water Affairs contact								
Directorate	Water Use Efficiency	ater Use Efficiency						
Adress	rivate Bag X313, Pretoria, 0001							
Contact person	Koena Given Moabelo							
Telephone number	012 336 8174	Cell number	082 653 9216					
E-mail	<u>MoabeloK@dwa.gov.za</u>							

Water Balance Data Confidence Level (see legend below)					
Input volume	Estimated values				
Authorised consumption (Engineering functions)	Estimated values				
Meter reading and billing (Finance functions)					
Legend					
High level of accuracy	Calibrated bulk meters, >98% of consumers are metered < 10 years old, <2% billing complaints				
Medium level of accuracy	Functional bulk meters, >90% of consumers are metered, <10% billing complaints				
Low level of accuracy Some functional bulk meters, >50% consumer meters, any age, meter reading & billing disfunctional					
Estimated values	No bulk or consumer meter readings, best estimate of water consumption				
No data	No data and no idea of water consumption				

WCWDM STRATEGY AND BUSINESS PLAN: Executive Summary

Province	Limpopo				WSA	No		
Municipal Code	L IM335				Category	R4		
						54		
District Municipality	Morulana							
Municipality								
Settlements Diphuti, Dublin, Hoedspsruit, Klaserie, Lorraine, Mica, Ofcolaco, Olifantsnek, Palmioop, Trichardtsdal								
		Executive	summary					
Status quo								
Very limited WCWDM activities are	undertaken in the V	VSA and there is	little management	information avail	able to perform a	oroper		
assessment of the water losses an	d potential savings.	This assessmen	it is in line with the	RPMS, Blue Drop	o assessments, IDI	P and WSDP.		
Most of the towns are informal with	h formal infrastructu	re in a relatively	smaller area withi	n the LM which er	ables limited meter	ering, billing and		
cost recovery in the LM. The curre	ent metering, billing	and cost recover	y systems are ade	equate however in	provements can b	e made in the		
Capturing and tracking of monthly	management inform	nation.	hy high vacancies	and low canacity	and skills			
The current estimated unit consum	notion of 112 l/c/d is	reasonable and	limited reduction i	s expected but a i	and skills.	vsis is required		
to verify this number. It seems the	re has been a drasti	ic decrease in the	e average unit con	sumption in the a	rea. The relations	hip with the		
community is generally positive ar	nd the communities	themselves are o	haracterised by hi	igh unemploymen	t and a large indig	ent population.		
The water tariffs are not promoting	WCWDM_are not c	ost reflective hou	wever they consu	mers hare general	ly very water effici	ent		
Strategy	aronar racard kaoni	ng analysis and	dovelopment of de	tailed manageme	nt information All	vacancies must		
be filled as a matter of priority toge	other with skills tran	sfer and capacity	/ building. The en	gineering and fina	ince department m	ust work closer		
together at the LM and DM level to	improve metering, b	billing and cost r	ecovery and start	with a meter audit	to further improve	cost recovery.		
A steering committee should be se	tup to report on a m	nonthly basis to o	council on water lo	ss figures, leaks	repaired, targets, p	orogress,		
consumer metering, billing and co	st recovery.							
Proper metering, billing and cost re	ecovery should be s	supported by con	nmunity awarenes	s that promotes re	porting of leaks, f	ixing of private		
reduction of 6 6% have been set.	the available information to a second se	ation, a target ree	duction in NRW of	54.6% down to 4	.9% and target inp	out volume		
compliance with RPMS and improv	ve IDP.	in structure to er	isure it reliects tru	ie cost, promote v		lowarus		
Business Plan								
The budget requirements for the ne	ext five years are su	mmarised in the	table below:					
Intervention	Year 1	Year 2	Year 3	Year 4	Year 5	Total		
Institutional	350 000	150 000	350 000	150 000	150 000	1 150 000		
Financial	3 327 580	3 227 580	3 327 580	3 227 580	3 227 580	16 337 900		
Social	3 082 476	3 082 476	2 832 476	2 832 476	2 832 476	14 662 380		
Technical	9 317 256	9 817 256	8 817 256	8 817 256	8 767 256	45 536 280		
Total	16 077 312	16 277 312	15 327 312	15 027 312	14 977 312	77 686 560		
Compliance								
Results from the Regulatory Perf	formance Measure	ment System (R	PMS) for WSA					
Kev	Performance Indica	tors		Achieved KPI	Required score	Performance		
				Score		assessment		
KPI 1: Access to water supply				3.165	3	Adequate		
KDI 2: Access to sanitation				3.125	3	Adequate		
KPI 4: Access to Free Basic Water	tion			2.089	3	Concern		
KDI 5. Drinking Water Ouglitum				U	3	Crisis		
KPI 5: Drinking water Quality mana	ayement			0	3	Concern		
KDI 7. Customor corridor managel	ment			4	3	Concern		
KDI & Institutional offectives	API /: Customer service quality 1.75 3 Concern							
KPI 0: INSTITUTIONAL ETTECTIVENESS	3.343	3.5	Concern					
KPI 10: Stratagio acost mance	2.929	4	Concern					
KDI 11. Wotor upc officiarow		4.534	3	Excellent				
IND data 3 NO data 3 NO data								
Results from Blue and Green Dro	p Assessments							
Assessment			2009	2010	2011	2012		
Blue drop			0.00%	74.50%	63.87%	79.21%		
Green drop			0.00%	-	61.60%			

WCWDM STRATEGY AND BUSINESS PLAN: Municipal Water Conservation and Water Demand Management Implementation Process Map

	Implementation Performed by Department	Monitoring and Review Performed by Department				
	Reviewed by SSC and DWA	Reviewed by SSC and DWA				
Vision	Mission	Status Quo Technical	Strategy Technical	Business Plan Technical	Implementation All Projects	Deliverables Technical
Water Services Act, 108 of 1997 Provide water services in an efficient, affordable, equitable, economical and sustainable manner to all consumers or notential consumers in its area of	Presidential Target (State of the Nation address 2010) Reduce water Losses by half by 2014	Information on demographics, demands, water loss, level of service Key water loss contributing factors Key performance indicators and targets Asset value and condition Departmental organogram	SWOT Analysis : Strengths, Weaknesses, Opportunities & Threats of technical department (human resources, processes, Goals and objectives: Achieving water loss reduction target in terms of available resources and non- revenue water. If no target exists, then goal is to develop a target. How : Identify key principles to achieve target (user pay, water restrictions, consumer education, etc.) Actions : Responsible person, measurement and timelines to address SWOT analysis	Bulk metering Leakage control and repair Sectorisation and zone metering Logging and water loss monitoring Non domestic and domestic metering and audits Resolve intermittent supply Pressure management Clean out and recommission existing infrastructure Training and capacity building	Council approval of Strategy and Business Plan Identify key stakeholders - setup working committees Appoint PSP Appoint contractor Assess / determine baseline	Record keeping and reporting process Monthly IWA Water Balance calculation for system and DMA No visible leakage Asset management Comply with Regulations R509 of 2001 Responsible WCWDM individual/unit Measurement against goals
jurisdiction.		Economic Tariffs Metering, billing and revenue collection status Existing sources of funding	Economic SWOT Analysis : Strengths, Weaknesses, Opportunities and Threats of funding sources Goals and objectives: Allocate sufficient funding to address WCWDM How : Identify key principles to obtain funding (improved meeting and billing, cost recovery, external funding, etc.) Actions : Responsible person, measurement and timelines to address SWOT analysis	Economic Review tariff structure Ensure effective metering and billing system Review CAPEX budget in terms of WDM goals Review OPEX budget in terms of WDM goals Develop business plan for external funding Training and capacity building	Project Quality Control Project Financial Management Establish record keeping and reporting processes Assess benefits from implementation Establish take-over procedure	Economic Sufficient budget allocation Realistic tariff setting Efficient meter reading, billing and cost recovery process Measurement against goals
BIG HAIRY AND AUDACIOUS VISION If it doesn't scare you, its not big enough		Social Customer profile Communication dynamics between WSA and consumers Existing support structures for consumers Level of stakeholder involvement	Social SWOT Analysis : Strengths, Weaknesses, Opportunities and Threats of consumers and institution Goals and objectives: Informed and supportive consumer and institution How : Identify key principles to develop turn consumers into customers (political, schools, specific consumer groups, water wise, etc.) Actions : Responsible person, measurements and timelines to address SWOT analysis	Social Raise awareness at institutional levels Raise awareness at institutional levels Identify and engage relevant stakeholders Establish customer care centre Training and capacity building Conduct WC/WDM education and awareness Conduct schools awareness campaigns	Training and capacity building	Social Political support Institutional support Informed, involved and supportive consumer Measurement against goals
		Institutional Existence of approved policies Existence of approved bylaws Regulatory compliance Legislative compliance	Interiments to dutress swort analysis Institutional SWOT Analysis : Strengths, Weaknesses, Opportunities and Threats of policies, bylaws, political support, enforcement, Regulatory compilance Goals and objectives: Reform organisation to support WCWDM How: Lidentify key principles to obtain improve (improved political support, policies, enforcement, etc.) Actions : Responsible person, measurement and	Institutional Establish policies in terms of payment for services, arrears, Establish bylaws that addresses water loss reduction and efficiency Succession planning - ensure initiatives continue		Institutional Approved policies Approved bylaws enforcement Regulatory compliance Succession plan Measurement aga

Review and update strategy and business plan . Implement and regulate.

Strategy & Business Plan_Maruleng/Process Map WRP Consulting Engineers Pty Ltd

WCWDM STRATEGY : Definitions

Terminology

	-	
Acronym	Description	Link
DWA	Department of Water Affairs	http://www.dwa.gov.za
WS RPMS	Water Services : Regulatory Performance Measurement System	http://www.dwa.gov.za/dir_ws/rpm/
WS NIS	Water Services : National Information System	http://www.dwa.gov.za/dir_ws/wsnis/
FBS	Water Services : Free Basic Water Project	http://www.dwaf.gov.za/dir_ws/fbw/
NRW	Non-revenue water. Volume of water for which no revenue is received (preferred term)	
UAW or UFW	Unaccounted-for water. Volume of water lost due to physical and apparent losses (not preferre	d term)
StatsSA NFC	Statistics South Africa : Non-Financial Census of Municipalities P9115	http://www.statssa.gov.za/

Information sources

Item	Source	Calculation
Population	DWA WS NIS or municipality	
Households	DWA WS NIS or municipality	
Connections - metered	Extrapolated 2007 DWA - WS FBW serviced above RDP or municipality	
Connections - Unmetered	Extrapolated 2007 DWA - WS FBW serviced at RDP or municipality	
Length of mains (km)	Actual value or calculated at average of 50 connections / km of mains	# connections ÷ 50
(A) System input volume	Total volume of potable water supplied by the municipality in kl/annum	
(B) Billed metered consumption	Total volume of water metered and billed by the municipality in kl/annum	
(C) Billed unmetered consumption	Total volume of water unmetered and billed by the municipality in kl/annum	
Underlined values	Calculated values using trends or averages	

Standard IWA Water Balance

	AUTHORISED CONSUMPTION: 1 + 2 + 3 + 4 Total water used for legitimate purposes 1. Billed metered water 2. Billed un-metered water 3. Unbilled metered water	BILLED METERED: 1. Water is billed for based on a metered consumption (see further explanatory notes). BILLED UN-METERED: 1 + 2 1. Water is billed for based on a flat rate tariff (ie. Not based on a meter reading) 2. Free basic water used through unbilled un-metered stand pipes or yard connections (see further explanatory notes)	REVENUE WATER: 1 + 2 1. Billed metered 2. Billed un-metered
SYSTEM INPUT VOLUME: 1 + 2 + 3 1. Total water treated and measured at treatment works outlet 2. Total water pumped directly	 Unbilled un-metered water 	UNBILLED METERED: 1. Usually very small in RSA, can include government buildings or parks that is metered but not billed. UNBILLED UN-METERED:	
 from boreholes into reticulation system Total water purchased from bulk water services provider 		 Estimated water used for legitimate purposes such as fire fighting. Also usage above free basic water for un- metered unbilled standpipe and yard connection usage. (see notes) 	NON REVENUE WATER: 1 + 2 + 3 + 4
Unaccounted for Water (UAW / UFW)	TOTAL LOSSES: 1 + 2 Total water not used for legitimate purposes 1. Apparent losses 2. Real losses	APPARENT LOSSES: 1 + 2 + 3 1. Water used through illegal connections 2. Water used but not billed for because of inaccurate meters 3. Water used but not billed for because of data transfer errors, low estimated readings or any administrative errors. REAL LOSSES: 1. Water that leaks from the system through pipes and connections or overflows from reservoirs	 Unbilled metered Unbilled un-metered Apparent losses Real losses

Apparent Losses

Illegal connections	%	Water Quality	Meter age and accuracy	%	Data transfer	%
Very high	10%	Very poor	> 10 years	10%	Very poor	9%
High	8%	Poor		8%	Poor	7%
Average	6%	Average	5-10 years	6%	Average	5%
Low	4%	Good		4%	Good	3%
Very low	2%	Very good	< 5 years	2%	Very good	1%

WCWDM STRATEGY : Base Information

Mun	Municipality name Maruleng			Date of current data	2012
			Current	Target	Change
	Demographics WSDP	Ref			
	Population Pa	ır 2.4 No	108 449	108 449	0
	Urban	No			
	Rural	No	108 449	108 449	
	Households Pa	ır 2.4 No	25 811	25 811	0
	Urban	No			
	Rural	No	25 811	25 811	
	Household density	Pop / HH	4.30	4.20	
	Growth rate: 5 years Par	4.1.3 %			0
	Consumer units Pa	ır 3.3 No	77	77	0
	Residential	No		0	
	Police stations	No	3	3	
	Magistrates Offices	No		0	
	Business	No		0	
	Dry industries	No		0	
	Office buildings	No		0	
	Prisons	No		0	
	Schools	No	63	63	
	Health facilities	No	11	11	
	Wet industries	No		0	
	Mining	No		0	
	Resorts and tourism	No		0	
	Infrastructure				
	Water Level of Service Pa	ır 3.1 no	22 097	22 097	0
	Stand pipes	HH	7 125	7 125	0
	Yard connections	HH	14 972	14 972	0
	House connections	HH			0
	Length of mains (km) Par	5.1.2 km	370.7	370.7	0
æ	Connections / km of mains	No / km	59.6	59.6	
Dat	Average system pressure	m	40	40	0
put	Time pressurised	%	80%	100%	0
<u>-</u>	Sanitation Level of Service Pa	ır 3.2	19 695	19 695	0
	None water borne	No	19 695	19 695	
	Water borne low flush	No			
	Septic tanks / conservancy	No			
	Water borne - WTW	No			
	Apparent losses	%	17%	17%	0%
	Consumer meter age	%	6%	6%	0%
	Illegal connections	%	6%	6%	0%
	Data transfer	%	5%	5%	0%
	Water balance data				
	System input volume	kℓ/annum	4 440 000	4 262 400	-177 600
	Own sources	kℓ/annum			0
	Other sources	kℓ/annum	4 440 000	4 262 400	-177 600
	Billed metered consumption	kℓ/annum	2 017 274	2 219 001	201 727
	Billed unmetered consumption	kℓ/annum			0
	Unbilled metered consumption	kℓ/annum			0
	Unbilled unmetered consumption	kℓ/annum			0

	Water Tariffs					
	Purchase of bulk water	Par 10 2	R/annum	R 15 540 000	R 14 918 400	-R 621 600 00
	Total operating cost	10.2	R/annum	D 31 020 000	D 20 836 900	_D 1 2/3 200 00
	Pote Durchass of hulk water			R 31 000 000	R 29 030 000	-K 1 245 200.00
	Rate - Purchase of bulk water		R/KC	R 3.30	R 3.30	
	Rate - Total operating	Der 10.2	K/KC	R 7.00	R /.UU	
	Domestic water Tariffs	Par 10.3	1.0/ //			
	0 to	6	ke/month	R 0.00	R 0.00	R 0.00
	to		k€/month		R 0.00	R 0.00
	to		k€/month		R 0.00	R 0.00
	to		k€/month		R 0.00	R 0.00
	to		k€/month		R 0.00	R 0.00
	> to	6	k€/month	R 3.91	R 3.91	R 0.00
	System input volume		kℓ/annum	4 440 000	4 262 400	-177 600
	Authorised Consumption		k€/annum	2 017 274	2 219 001	201 727
	Billed authorised		kℓ/annum	2 017 274	2 219 001	201 727
	Billed metered		k€/annum	2 017 274	2 219 001	201 727
suo	Billed unmetered		kℓ/annum	0	0	0
lati	Unhilled authorised		kl/annum	0	0	0
alcu	Unbilled metered		k@/annum	0	0	0
ů		4	k@/annum	0	0	0
uce.	Unbined unmetere	u	k€/annum	0 400 700	0 042 200	0
Bala	water losses		KC/annum	2 422 720	2 043 399	-3/9 32/
erl	Apparent losses		kť/annum	411 863	34/ 3/8	0
Wat	Real losses		kℓ/annum	2 010 863	1 696 021	-379 327
_	UARL		k€/annum	284 408	355 510	0
	Potential real loss	saving	kℓ/annum	1 726 454	1 340 511	-379 327
	Revenue water		k€/annum	2 017 274	2 219 001	201 727
	Non-Revenue water		k€/annum	2 422 726	2 043 399	-379 327
	System input volume unit con	sumption				
	litres / capita / day		ℓ/c/d	112	108	-4
	m ³ / household / month		m ³ / hh / month	14	14	0
	m ³ / connection / month		m ³ / conn / month	17	16	-1
	Authorised unit consumption					
	litres / capita / day		€/c/d	51	56	5
	m ³ / household / month		m ³ / hh / month	7	7	0
	m ³ / connection / month		m ³ /conn/month	8		0
	Water loss indicators			•		
	IIARI : Losses / connection	/ day	l conn / day	35	1 4	٩
ors	CAPL : Losses / connection	/ day	e / conn / day	240	210	30
cat	CARE : LOSSES / Connection		C / Comi / day	243	210	-59
lpdi	Infrastructure Leakage Index	(ILI)	• 	1.07	4.11	-2
ce	Losses / km mains / day		m ³ / km / day	14.9	12.5	-2
nan	Non-revenue water		%	54.6%	47.9%	-6.6%
fon	Unbilled Consumption		%	0.0%	0.0%	0.0%
Per	Water Losses		%	54.6%	47.9%	-6.6%
(ey	Apparent losses		%	9.3%	8.1%	-1.1%
-	Real losses		%	45.3%	39.8%	-5.5%
	Water balance reduction targe	ts				
	System input volume		%		-4.0%	
	Authorised Consumption		%		10.0%	
	Billed authorised		%		10.0%	
	Billed metered		%		10.0%	
	Billed unmetered		%		0.0%	
	Unbilled authorised		%		0.0%	
	Unbilled metered		%		0.0%	
	Unbilled unmetere	d	%		0.0%	
		-	/0		0.070	
	Average monthly water hill / a	opposien	P/conn/month	D 24	D 24	DA
alys	Estimated annual income	mection		R 31	R 31	RU
Ani	Lotinateu annual income		R / annum	K ö 294 330	K ö Z94 330	R U
ost	Notar water supply cost		R / annum	R 31 080 000	R 29 836 800	-R 1 243 200
C	Net profit / loss		R / annum	-R 22 785 670	-R 21 542 470	R 1 243 200
e.	Town and description		Source	MI/day	m³/annum	million m ³ /annum

	onc	ent		Blue Drop 2011		0	0.000
•	r So and	atm				0	0.000
	/ate	Tre				0	0.000
-	\$		Total		0.00	0	0.000

Current IWA Water Balance Diagram (million m ³ /annum)						
	Authorised consumption = 2.017	Billed authorised = 2.017	Billed metered = 2.017	Revenue water = 2.017		
System Input Volume = 4.440		Apparent losses = 0.412	Apparent losses = 0.412			
	Water losses = 2.423	Real Losses = 2.011	Real Losses = 2.011	Non-revenue water = 2.423		

Target IWA Water Balance Diagram (million m ³ /annum)							
System Input Volume = 4.262	Authorised consumption = 2.219	Billed authorised = 2.219	Billed metered = 2.219	Revenue water = 2.219			
		Apparent losses = 0.347	Apparent losses = 0.347				
	Water losses = 2.043	Real Losses = 1.696	Real Losses = 1.696	Non-revenue water = 2.043			
		Reduced Input Volume = 0.178					

WCWDM STRATEGY : Water Balance History

Municipality Name Maruleng

		Year ending	Jun-05	Jun-06	Jun-07	Jun-08	Jun-09	Jun-10	Jun-11	.lun-12	.lun-18
	Population	<u> </u>	96 358	97 066	97 647	98 377	98 966	104 904	111 198	108 449	163 067
	Hauaahalda		24.044	24 204	24 220	24.496	24 644	22.044	24.295	25.004	29.045
	nousenoius		21 044	21 201	21 320	21 400	21 014	22 911	24 200	23 001	30 915
	Connections - met	ered	<u>14 186</u>	<u>14 290</u>	<u>14 376</u>	14 483	<u>14 570</u>	<u>15 444</u>	<u>16 371</u>	<u>17 353</u>	26 092
	Connections - Unme	etered	<u>6 978</u>	<u>7 030</u>	<u>7 073</u>	7 125	<u>7 167</u>	<u>7 597</u>	<u>8 053</u>	<u>8 537</u>	12 836
Data	Length of mains (km)	<u>353</u>	<u>356</u>	<u>358</u>	<u>361</u>	<u>363</u>	<u>385</u>	<u>408</u>	<u>432</u>	650
Input	System input volume	kl/annum	3 327 770	3 209 416	<u>3 401 981</u>	<u>3 606 100</u>	3 600 845	<u>3 816 896</u>	<u>4 045 909</u>	4 440 000	4 262 400
	Billed metered	kl/annum	2 268 184	2 268 184	<u>2 100 000</u>	<u>2 100 000</u>	2 017 274	<u>2 017 274</u>	2 017 274	2 017 274	2 219 001
	Billed unmetered	kl/annum									
	Unbilled metered	kl/annum									
	Unbilled unmetered	kl/annum									
suo	Revenue water	kl/annum	2 268 184	2 268 184	2 100 000	2 100 000	2 017 274	2 017 274	2 017 274	2 017 274	2 219 001
lculati	Non-Revenue water	kl/annum	1 059 586	941 232	1 301 981	1 506 100	1 583 571	1 799 622	2 028 635	2 422 726	2 043 399
лсе Са	Water Losses	kl/annum	1 059 586	941 232	1 301 981	1 506 100	1 583 571	1 799 622	2 028 635	2 422 726	2 043 399
r Balaı	% Non-revenue w	ater	阾 31.8%	▶ 29.3%	₱ 38.3%	P 41.8%	🎙 44.0%	🎙 47.1%	P 50.1%	P 54.6%	P 47.9%
Wate	% Water Losse	s	陀 31.8%	P 29.3%	₱ 38.3%	P 41.8%	P 44.0%	P 47.1%	P 50.1%	P 54.6%	P 47.9%
ų	Input : Litres / capita	a / day	95 🥐	91 🦻	۴ 95	۴ 100	۴ 100	۴ 100	۴ 100	P 112	P 72
dicator	Input: m³ / household	/ month	۴ 13	۴ 13	۴ 13	۴ 14	۴ 14	۴ 14	۴ 14	P 14	9 🎙
formance inc	Billed : Litres / capita	a / day	64 🥐	64 🖗	۶9 🏲	۶8 🖗	۶6 🖗	۴ 53	۴ 50	۴ 51	۶7 🖗
	Billed : m ³ / household	/ month	9 🎙	9 🖗	8 🌱	8 🌱	8 ۴	۴ 7	۴ 7	6 🎙	۶ 🖗
ey peri	% Population gro	wth		0.73%	0.60%	0.75%	0.60%	6.00%	6.00%	-2.47%	46.65%
ž	% Water demand g	rowth		-3.56%	6.00%	6.00%	-0.15%	6.00%	6.00%	9.74%	5.35%
	Source of information		DWA NIS StatsSA NFC	DWA NIS StatsSA NFC	DWA NIS Estimated	DWA NIS Estimated	DWA NIS StatsSA NFC	DWA NIS Estimated			



WCWDM STRATEGY : Qualitative Scorecard

Municipality Name Maruleng

Introduction

The purpose of this section is to perform a qualitative evaluation of the municipality's water business. The objectives are as follows :

SWOT Analysis	External - Opportunities Positive external conditions which you don't control which you could take advantage of	External - Threats Negative conditions you don't control but could minimise their effects
Internal - Strengths Positive aspects under your control and on which you may wish to capitalise	Strengths and Opportunities (SO) – Strategies that use strengths to maximize opportunities.	Strengths and Threats (ST) – Strategies that use strengths to minimize threats.
Internal - Weaknesses Negative aspects under your control (to a large extent) which you could plan to improve	Weaknesses and Opportunities (WO) – Strategies that minimize weaknesses by taking advantage of opportunities.	Weaknesses and Threats (WT) – Strategies that minimize weaknesses and avoid threats.

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
1	INSTITUTIONAL REVIEW				
1.1	Water and Sanitation department structure				
1.1.1	Is there an approved organogram for the Water and Sanitation Department?	There is an approved organogram in place. The organogram does cater sufficiently for the work.	S	Review the existing organogram and ensure that it in incorporates WC/WDM personnel.	1
1.1.2	What is the vacancy rate in the department and is it a problem?	The vacancy rate is currently approximately 40%; 10 % in management and 30 % in O&M.	т	Engage with the District and advertise and fill the identified critical vacant posts. Engage with the Department of finance at the District Level to identify and explore possible funding options and budget requirements for the critical posts.	1
1.1.3	Does the department have the correct technical skills for the correct posts.	There are not enough technical skills in the department.	т	Increase management, and O&M capacity through new human resources and support it with WC/WDM training.	1
1.1.4	Is training and capacity building being done?	There is no training and capacity building taking place.	0	Institute a mandatory WC/WDM training programme for technical staff. Invest in team building and workshop sessions incorporating the councillors and municipal management to boost staff morale.	2
1.1.5	Are there sufficient support structures ito vehicles, equipment, materials etc.?	There are not enough support structures. The challenge is mainly funding and procurement processes. Procurement is too slow and there is very little equipment available in the municipality's store facility.	T	Engage with the Department of Finance at the District level and allocate an adequate budget for the critical spares. Allocate a specific person who will be responsible for expediting equipment orders and managing quality control in terms of the procurement processes.	1

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
1.1.6	Does the municipality own any water loss control equipment such as loggers, listening sticks, etc.?	The municipality has no water loss equipment.	0	It is recommended that loggers and simple leak detection equipment be purchased to improve water loss monitoring and management in the system.	3
1.2	Municipal support				
1.2.1	Describe the working relationship with other departments such finance, planning, housing etc.?	The relationship with finance and other internal Departments is positive.	0	Establish a NRW steering committee comprising representatives from the technical, communications and finance departments to ensure that communication and access to information remains efficient.	1
1.2.2	Are the politicians supporting the department?	The politicians are supportive but they do require training to improve their understanding of the water business.	0	Undertake a councillor WC/WDM induction programme to capitalise on the existing relationship and build a communication bridge between the municipality and the customers.	2
1.3	Public Private Partnerships				
1.3.1	Is there any major industrial or institutional role player in the area and is there co-operation?	No, just agricultural processing plants.	0	Identify any other additional role players through the top consumer monitoring and conduct courtesy visits as a first phase of the programme. Establish a stakeholder forum if practicable and encourage the participation of the big industries in the forum	2
1.3.2	If yes, what does the co-operation involve and can it be expanded?				
1.4	Legislation and bylaws				
1.4.1	Does the municipality have a customer service charter?	There is no customer services charter in place.	0	Develop a customer service charter to ensure the customers are aware of the municipalities commitment and their responsibilities as consumers.	2
1.4.2	What is the status and age of the existing bylaws and do they address water loss management?	There are no water services bylaws in place.	Т	Develop appropriate bylaws specific to Maruleng Municipality and ensure that they address WC/WDM issues. Bylaws can also be obtained from the District which can be utilised whilst the development of municipality specific bylaws is being considered.	2
1.4.3	Are bylaws enforced and if not, why not?	No.	Т	Develop partnerships with the credit control and legal departments as well as the SAPS and put appropriate bylaw enforcement mechanisms in place.	2
1.4.4	What is the status and age of Water Services Development Plan?				

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
2	FINANCIAL REVIEW				
2.1	Financial Department				
2.1.1	What is your opinion of the Finance Department's ability to perform metering and billing	The billing is being performed well but the municipality is considering AMR and a pilot is currently under way.	0	Improve access to the billing information and utilise the effectiveness of the billing system to monitor and track NRW	1
2.1.2	Is training and capacity building being done?	No training.	0	Plan a WC/WDM workshop for the finance personnel and meter readers to facilitate an improved understanding of the technical issues and information requirements.	2
2.1.3	What is the state of the municipal metering and billing system?	The metering and billing appears relatively fair and metering exception reports are given to the technical department.	0	Obtain billed metered consumption from the finance department on a monthly basis and monitor water sales.	1
2.1.4	What is your primary source of funding?	Grant funding.	0	Focus on improving cost recovery to continuously reduce dependency on grant funding.	2
2.2	Tariffs				
2.2.1	Who prepares the water tariffs and what is it based on?	The department of finance prepares the tariffs and are guided by the District. The technical department makes minimal inputs into this process.	0	Ensure that the technical department makes inputs into the tariff setting process to ensure that the tariffs are feasible for the municipality and the consumers. Institute a rising block tariff sufficiently differentiated in cost at each level to promote WC/WDM with the bighest tariff at least double the lowest tariff	1
2.2.2	What is the tariff structure and does it promote WCWDM?	There is a flat tariff in place for the municipality. The tariff does not take full account of the water services.	т	Review the current tariff structure. Institute a rising block tariff sufficiently differentiated in cost at each level to promote WC/WDM with the highest tariff at least double the lowest tariff	1
2.2.3	Is the water supplied considered affordable by the customers?	The consumers appear to find the water affordable.	0	Continue ensuring that the tariffs remain affordable particularly for the efficient and low income water users.	1
2.3	Meter Reading and Billing				
2.3.1	Who performs the water meter readings, frequency and accuracy?	The finance department conducts the meter readings.	0	Monitor the frequency of meter reading and customer complaints of inaccurate billing to determine the effectiveness of the existing meter reading team.	2
2.3.2	Are the meter readers trained and can they report leakage when encountered on site?	There is currently no training provided for the meter readers.	0	Provide training for the meter readers on an annual basis particularly on site training based on feedback from the consumers.	2
2.3.3	Is the water bill understandable and informative?	The water bill is comprehensible.	0	Consider including water conservation tips and information in the water bill. It is also recommended to display 6 months graphical consumption data on the bill to aid consumers in effectively monitoring water use.	3
2.4	Credit control				

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
2.4.1	Is credit control being implemented and by whom?	The credit control policy is enforced by finance.	0	Capitalise on the relationship with the councillors and the community and ensure that the areas that re not yet metered are metered and billed to increase revenue water.	3
2.4.2	What is the current level of non-payment?	The water is cut off completely when people don't pay so everyone pays for water.	0	Continue to promote payment for services in the metered areas through the councillors and education and awareness.	2
3	SOCIAL REVIEW				
3.1	Customer profile				
3.1.1	Describe the general consumer profile i.e. Income levels, indigence, unemployment, literacy	3700 people are indigent out of a population of 90 000. Revenue comes from only 2.3% of the population. 60% of the populations is not paying for water.	0	Focus on educating the indigent population on efficient water use and the importance of the free basic allocation as well as its limitations.	1
3.1.2	Describe the relationship between customers and the municipality and reasons?	The relationship with the consumers is very positive.	0	The existing relationship should be improved on and utilised to increasingly promote water conservation.	1
3.2	Customer awareness				
3.2.1	Are consumers informed regarding the value of water?	The consumers are water efficient and understand the value of water.	0	Continue to promote water efficiency. Utilise this positive community attribute and encourage the installation of water efficient devices and leak repair to further decrease water losses	1
3.2.2	What is the level of leakage reporting by the community and what method do they use?	People report leakage directly to the O&M team. The complaints are not captured anywhere.	0	Make one number available for the reporting of leaks. Publicise the number and ensure that the leak reports are captured in an electronic system to aid more effective tracking of the leakage	3
3.2.3	What are the most prominent consumer behavioural challenges encountered by the municipality?	Excessive irrigation is a big challenge. Vandalism of boreholes is also a big problem in the rural areas.	т	The community awareness campaign should be tailored to address these problems. The councillors should be encouraged to make these issues an agenda at all public meetings held in the different wards.	2
3.2.4	Is xeriscaped gardening and rain water harvesting encouraged?	No.	0	As part of a community awareness campaign, encourage consumers to harvest rain water and utilise it for garden irrigation and cleaning to reduce the demand for potable water and to undertake xeriscaped gardening where practicable.	2
3.2.5	Are radio campaigns, bill board, pamphlets, informative billing used to inform and educate customers?	No. A media campaign is only undertaken during water week.	0	Develop simple visual material in the form of pamphlets which can be used to educate consumers on efficient water use. Periodically publicise water tips on local radio stations and newspapers.	2
3.3	Schools awareness				
3.3.1	Number of primary and secondary schools?				

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
3.3.2	Frequency and scope of schools awareness campaigns?	There is no schools campaign taking place.	0	Establish a relationship with schools. Monitor their consumption on a monthly basis and undertake education and awareness. Huge benefit can be derived from this. The section 21 schools in particular should be visited, monitored and encouraged to fix leakage as the O&M budgets are operated by the school management for this category of schools.	2
3.3.3	Are goals and objectives monitored and controlled?	No.			
3.4	Customer Care Centre				
3.4.1	Does the municipality have a CCC and who operates it?	The municipality does not have a customer care centre.	0	Obtained a trained individuals to receive and refer customer complaints and establish a customer care land line. Publicise the call centre and encourage the consumers to become the eyes and ears of the municipality and to report water and sanitation related problems.	2
3.4.2	How and to whom are billing queries referred?	Billing queries are reported through the finance department land line.	0	Obtain an electronic system to capture and monitor the queries referred and to track the resolution of the queries and leak reports.	2
3.4.3	To whom are the leak reports referred and do consumers have confidence in the reporting system?				

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
4	TECHNICAL REVIEW				
4.1	Measurement and control				
4.1.1	Is the system input volume measured, monitored and controlled?	The SIV is available but the meter is not read on a monthly basis. The SIV is not monitored.	W	Read the bulk meter, record the meter readings on a monthly basis and monitor input volumes.	1
4.1.2	Is the water supply system sectorised into zones and districts?	No sectorisation has taken place.	W	Zone meters must be installed and read on a monthly basis. The readings must be captured on a spread sheet.	2
4.1.3	Are the supply to the zones and districts metered?				
4.1.4	Is the system monitored through a telemetry system?	There is no telemetry system in place. The municipality plans to put elevated tanks in place. The municipality owns no land in the municipality and is thus land locked and cannot put up reservoirs yet.			
4.1.5	What is the Frequency and detail of your water balance calculation?	No water balance calculations are being conducted currently.	w	Develop an NRW water balance which must be updated on a monthly basis to monitor water losses.	1
4.1.6	Are minimum night flows, consumption trends and logging used to monitor the system?	No.	0	Obtain and install logging equipment periodically on the zone meters once they have been installed and conduct MNF analysis to determine leakage levels and areas experiencing high or low pressures.	3
4.1.7	Are monthly management reports prepared and key performance indicators measured?				
4.2	Physical leakage				
4.2.1	What is the average age of the network, pipe material, replacement programme?	The pipes are very old and they are mainly AC pipes. No replacement programme is currently in place.	Т	Set aside 5% of the CAPEX budget for the replacement of the network.	1
4.2.2	Number of burst pipes reported and repaired per week / month and the average response time?	The municipality experiences on average one pipe burst per week. The age of the network is the primary problem.	w	Ensure that pipe bursts are repaired within a 48 hour period.	1
4.2.3	What is the primary cause of burst pipes?	The network is old.	Т	Allocate a proper budget for replacement and refurbishment. Budget a minimum of 5% of the infrastructure value for this purpose to reduce the risk of system failure. Also consider implementing pressure management in areas with high burst frequencies.	1
4.2.4	Are active leak detection programmes conducted?	There is active leak detection taking place which is mostly visual.	0	Continue to encourage community reporting of leakage. Undertake active leak detection on the network on an annual basis. Select appropriate areas for the leak detection exercise based on the district meter readings once sectorisation has taken place. This can be done through the meter readers. Continue to focus of visual leak detection	3
4.2.5	How often and for how long do reservoirs overflow?	There are reservoirs in the villages but they are never full. There are 33 villages in total which primarily use boreholes.	0	Continue to monitor the reservoirs on a monthly basis. Undertake an annual audit on the condition of the reservoirs.	3
4.2.6	Are water losses from treatment processes (backwash, etc.) monitored and minimised?				

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
4.2.7	Is leakage on private properties a problem and if so, why?	Internal plumbing leakage is generally not a significant problem.	0	Undertake an internal leak audit to accurately determine the extent of water losses and do a cost benefit analysis to assess the merit of periodically performing leak repairs for indigent consumers.	2
4.2.8	Are leaks on indigent private properties repaired and removal of wasteful devices encouraged?				
4.3	Pressure management and control valves				
4.3.1	What is the average and maximum system pressure?	uncertain.			
4.3.2	Is basic or advanced pressure management being implemented?	No.	0	Consider undertaking logging in areas experiencing high burst frequencies and monitor on a monthly basis. If the pressures are high for the area or exceed the regulations stipulated 9 bar, install pressure reducing valves to regulate the pressures more effectively.	2
4.3.3	Are control valves pro-actively being maintained to prevent overflowing reservoirs?	Only reactive maintenance is undertaken.	т	Undertake an annual control valve audit to assess the condition of the control valves and ensure that they are in proper working order.	2
4.4	Consumer metering				
4.4.1	Are domestic and non-domestic consumers metered and which type of meter is used?	Everyone in town is metered which is 2.3 % of the population.	0	Meter and bill 100% of non domestic connections as a priority and increasingly meter and bill the domestic consumers where practicable to increase revenue water.	1
4.4.2	What is the condition, age and accuracy of water meters?	The meters are very new (October 2011) and they are brass meters.	S	Continue to budget and implement meter replacement programmes particularly for bulk and non domestic consumers.	1
4.4.3	Are the top consumers pro-actively monitored on a monthly basis?	The top consumers are proactively monitored by the technical department.	S	Continue to monitor the top consumers. Undertake a top consumer audit and ensure that all connections are metered and billed.	1
4.4.4	Describe the water quality and its impact on consumer water meters?	The water quality is not very good and sometimes does impact on the meters.	W	Consider installing a water treatment package plant in selected areas with bad water quality to improve the services to those areas. Metering and billing can then be effected to recover the costs.	2
4.4.5	What is the prevalence and control of illegal connections?	There is a high prevalence of illegal connections in the rural areas.	т	Actively monitor illegal connections and periodically undertake an audit on the meters. This can be conducted by the meter readers.	1
4.5	Management information				
4.5.1	Does the Municipality have an asset register and asset management programme?	There is an internal asset register for the LM with no info on water. The water asset register sits with the DM.	0	Review the asset register system in place. Maintain and update the asset register on an annual basis. Ensure that the asset register provides critical technical information such as the age, value and replacement date of the assets.	2
4.5.2	What is the status and age of as-built drawings?	There are no as built drawings for the network.	Т	Develop electronic as built drawings for the whole network.	2

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
Summary					

SWOT Analysis	Helpful	Harmful
Internal factors (Staff, infrastructure, tools, equipment)	Approved organogram in place Monitoring of top consumers Customer Service Charters in all the LM's	Very high vacancy rate - lack of capacity No water loss equipment No proactive monitoring of water losses in zones Limited bulk metering No Sectorisation and zone metering
Internal factors (Politics, finance, consumers, economics)	Good relationship with finance but can improve Community and schools Awareness Councillor training programme Review charters, policies and bylaws to promote WDM Metering of all non domestic consumers	Very old infrastructure Insufficient vehicles and material to support O&M Dependency on grant funding Uninformed community Illegal connections High levels of leakage on private properties Poor relationship with consumers Uninformed councillors
WCWDM STRATEGY : Quantitative Scorecard

Municipality Name Maruleng

Introduction

The purpose of the Water Conservation / Water Demand Management (WC/WDM) Scorecard is to ascertain the status quo of WC/WDM and evaluate the potential for WC/WDM measures to be implemented in these systems. The scorecard is also designed to enable the Regulator (Department of Water Affairs) to assess the current situation regarding losses and levels of wastage in all water supply systems countrywide. The scorecard consists of 25 multiple choice questions with each question getting scored from 0 to 4. The Regulator and WSA can track progress with each year the scorecard gets completed. Each question ends with an audit requirement which indicates what will be required by the Regulator should the questionnaire be audited. It also provides an indication on what is required in terms of each of the measures.

Completed by	PSP		
Date	Aug-12		Average
1. Development of Standard Water Balance	0		0
		•	
2. Pressurised supply to all consumers 100% of time	1		1
		1	
3. Residential Metering System	1		1
		• •	
4. Non Residential Meters (Commercial, Industrial and Institutional)	2		2
5. Effective Billing System & Informative Billing	1		1
6. Network (Leakage) Complaints System	1		1
7. Billing and Metering Complaints System	1		1
8. Asset Register for Water Reticulation System	2		2
		1	
9. Asset Management - Capital Works	1		1
10. Asset Management - Operations and Maintenance	1		1
		1	
11. Dedicated WDM support	1		1
12. Active Leakage Control	0		0
13. Effective Sectorisation	0		0
14. Effective Bulk Meter Management	2		2
	•		
15. Effective Zone Meter Management and Night Flow Analysis	0		0
	•		
16. Pressure Management and Maintenance of Pressure Reducing Valves	0		0
17. As-Built Drawings of Bulk and Reticulation Infrastructure	0		0
	_		
18. Schematic Layout of Water Infrastructure	2		2
			1

Date	Aug-12				Average
19. Regulations and Bylaws	2				2
20. Tariffs					
21. Technical Support to Customers	0				0
				-	
22. Removal of Unlawful Connections	1				1
23. Community Awareness and Education Programmes	0				0
				-	
24. Schools Awareness and Education Programmes	0				0
25. Newspaper & radio articles plus posters and leaflets for distribution	0				0
Total score (maximum 100)	19	0	0	0	19



WCWDM STRATEGY AND BUSINESS PLAN : BUDGET AND CASH FLOW

Municipality name Maruleng

COSTS										
	Item	Unit	Quantity / year	Rate	Year 1	Year 2	Year 3	Year 4	Year 5	Total
INSTITUTION	AL / LEGISLATIVE INTERVENTIONS									
Institutional re	view:				100%					100%
CAPEX	Review organogram and fill vacancies	Sum	1	R 200 000	R 200 000	R 0	R 0	R 0	R 0	R 200 000
OPEX		Sum			R 0	R 0	R 0	R 0	R 0	R 0
Training and e	education :				50%	50%				100%
CAPEX	Not applicable	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Assume one training course / employee / annum	No	10	R 5 000	R 50 000	R 50 000	R 50 000	R 50 000	R 50 000	R 250 000
Customer cha	rter, policy, bylaws :						100%			100%
CAPEX	Review bylaws on 5 year cycles	Sum	1	R 200 000	R 0	R 0	R 200 000	R 0	R 0	R 200 000
OPEX	Enforce bylaws	Sum	1	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 500 000
FINANCIAL IN	NTERVENTIONS									
Effective mete	ring and billing :				50%	50%				100%
CAPEX	Perform meter audit	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Ensure proper metering and billing of all consumers	No	14 489	R 100	R 1 448 900	R 7 244 500				
Water tariffs :				-	50%		50%	- -		100%
CAPEX	Review water tariffs	Sum	1	R 200 000	R 100 000	R 0	R 100 000	R 0	R 0	R 200 000
OPEX	Not applicable	Sum		R 0	R 0	R 0	R 0	R 0	R 0	R 0
Informative bil	ling :				20%	20%	20%	20%	20%	100%
CAPEX	Improve invoice to show monthly consumption	Sum	1	R 200 000	R 40 000	R 40 000	R 40 000	R 40 000	R 40 000	R 200 000
OPEX	Distribute information with bill	Sum	14 489	R 120	R 1 738 680	R 8 693 400				
SOCIAL INTE	RVENTIONS									
Consumer Av	wareness Campaign :				20%	20%	20%	20%	20%	100%
CAPEX	Install bill boards, design pamphlets, radio campaigns	Sum	24 589	R 120	R 590 136	R 2 950 680				
OPEX	Target households on monthly basis with awareness cam	No	24 589	R 60	R 1 475 340	R 7 376 700				
Consumer He	elp and Support Desk :				50%	50%				100%
CAPEX	Improve existing help-desk to provide one-stop service	Sum	1	R 500 000	R 250 000	R 250 000	R 0	R 0	R 0	R 500 000
OPEX	Maintain help-desk	Sum	1	R 200 000	R 200 000	R 200 000	R 200 000	R 200 000	R 200 000	R 1 000 000
Schools awa	reness :				20%	20%	20%	20%	20%	100%
CAPEX	Prepare schools competition, awareness, retrofit	No	63	R 20 000	R 252 000	R 252 000	R 252 000	R 252 000	R 252 000	R 1 260 000
OPEX	Monthly schools awareness campaign	No	63	R 5 000	R 315 000	R 1 575 000				

TECHNICAL IN	ITERVENTIONS									
Bulk metering	:				50%	50%				100%
CAPEX	New meter installations required	No	10	R 50 000	R 250 000	R 250 000	R 0	R 0	R 0	R 500 000
OPEX	Maintenance of existing bulk meters	No	20	R 1 000	R 20 000	R 20 000	R 20 000	R 20 000	R 20 000	R 100 000
Sectorisation :			•		50%	50%	•			100%
CAPEX	Setup of new DMA / PMAs	No	10	R 50 000	R 250 000	R 250 000	R 0	R 0	R 0	R 500 000
OPEX	Maintenance of DMA / PMAs including step testing	No	10	R 25 000	R 250 000	R 250 000	R 250 000	R 250 000	R 250 000	R 1 250 000
Active Leakage	e Control :		•		50%	50%	•		· · ·	100%
CAPEX	Not applicable	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Fix all visible and reported leaks	No	370	R 1 500	R 555 000	R 2 775 000				
Valve audits	· · · · ·				20%	20%	20%	20%	20%	100%
CAPEX	Locate, clean, repair, document network valves	No	1 480	R 4 000	R 1 184 000	R 1 184 000	R 1 184 000	R 1 184 000	R 1 184 000	R 5 920 000
OPEX	Maintain network valves	No	1 480	R 1 000	R 1 480 000	R 1 480 000	R 1 480 000	R 1 480 000	R 1 480 000	R 7 400 000
Leak and loggi	ing equipment :				25%	25%	25%	25%	•	100%
CAPEX	Procure basic WDM equipment	Sum	10	R 20 000	R 50 000	R 50 000	R 50 000	R 50 000	R 0	R 200 000
OPEX	Not applicable	Sum			R 0	R 0	R 0	R 0	R 0	R 0
Telemetry :					•	50%	50%		•	100%
CAPEX	Install telemetry sites	No		R 15 000	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Maintain telemetry sitAsmedia campaign is only undertake	No	10	R 1 500	R 15 000	R 75 000				
Retrofitting an	d removal of wasteful devices :				20%	20%	20%	20%	20%	100%
CAPEX	Retrofit government buildings, schools, etc.	No	2 898	R 1 000	R 579 560	R 2 897 800				
OPEX	Not applicable	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
Mains replacer	ment :		•		20%	20%	20%	20%	20%	100%
CAPEX	Replace critical leaking mains	km	37.0	R 100 000	R 740 000	R 3 700 000				
OPEX	Not applicable	km		R 0	R 0	R 0	R 0	R 0	R 0	R 0
Pressure mana	agement :				20%	20%	20%	20%	20%	100%
CAPEX	New pressure management installations	No	5	R 750 000	R 3 750 000					
OPEX	Maintain pressure management installations	No	5	R 5 000	R 25 000	R 25 000	R 25 000	R 25 000	R 25 000	R 125 000
Control valve r	nanagement :		•		50%	50%	•			100%
CAPEX	New control valve installations	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Maintain all control valve installations	No	20	R 5 000	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 500 000
Consumer met	tering :		•		20%	20%	20%	20%	20%	100%
CAPEX	Replacement of old water meters	No	1 449	R 1 200	R 347 736	R 1 738 680				
OPEX	Replacement of broken and cycled water meters	No	1 449	R 1 200	R 1 738 680	R 8 693 400				
Top consumer	audit :				20%	20%	20%	20%	20%	100%
CAPEX	Audit and retrofit non domestic consumers	No	145	R 10 000	R 289 780	R 1 448 900				
OPEX	Maintain non domestic consumers installations	No	145	R 500	R 72 500	R 72 500	R 72 500	R 72 500	R 72 500	R 362 500
GIS / CAD syst	tem :				20%	20%	20%	20%	20%	100%
CAPEX	Setup CAD/ GIS system	Sum	1	R 1 000 000	R 200 000	R 200 000	R 200 000	R 200 000	R 200 000	R 1 000 000
OPEX	Maintain CAD / GIS system	Sum	1	R 200 000	R 1 000 000					
Management Ir	nformation System :			ŀ	20%	20%	20%	20%	20%	100%

CAPEX	Setup basic MIS system to support WDM	Sum	1	R 500 000	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 500 000
OPEX	Maintain MIS system	Sum	1	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 500 000
Water loss m	onitoring and audits:				0%	100%				100%
CAPEX	Perform proper analysis of distribution network	Sum	1	R 500 000	R 0	R 500 000	R 0	R 0	R 0	R 500 000
OPEX	Perform ad hoc analysis to monitor interventions	Sum	1	R 20 000	R 20 000	R 20 000	R 20 000	R 20 000	R 20 000	R 100 000
	ltem	Туре			Year 1	Year 2	Year 3	Year 4	Year 5	Total
TOTAL COST	TS									
Institutional		CAPEX			R 200 000	R 0	R 200 000	R 0	R 0	R 400 000
		OPEX			R 150 000	R 750 000				
		TOTAL			R 350 000	R 150 000	R 350 000	R 150 000	R 150 000	R 1 150 000
Financial		CAPEX			R 140 000	R 40 000	R 140 000	R 40 000	R 40 000	R 400 000
		OPEX			R 3 187 580	R 15 937 900				
		TOTAL			R 3 327 580	R 3 227 580	R 3 327 580	R 3 227 580	R 3 227 580	R 16 337 900
Social		CAPEX			R 1 092 136	R 1 092 136	R 842 136	R 842 136	R 842 136	R 4 710 680
		OPEX			R 1 990 340	R 9 951 700				
		TOTAL			R 3 082 476	R 3 082 476	R 2 832 476	R 2 832 476	R 2 832 476	R 14 662 380
Technical		CAPEX			R 4 741 076	R 5 241 076	R 4 241 076	R 4 241 076	R 4 191 076	R 22 655 380
-		OPEX			R 4 576 180	R 22 880 900				
-		TOTAL			R 9 317 256	R 9 817 256	R 8 817 256	R 8 817 256	R 8 767 256	R 45 536 280
Total		CAPEX			R 6 173 212	R 6 373 212	R 5 423 212	R 5 123 212	R 5 073 212	R 28 166 060
		OPEX			R 9 904 100	R 49 520 500				
		TOTAL			R 16 077 312	R 16 277 312	R 15 327 312	R 15 027 312	R 14 977 312	R 77 686 560
					R 16 077 312	R 16 277 312	R 15 327 312	R 15 027 312	R 14 977 312	
BENEFITS										
	ltem	Unit			Year 1	Year 2	Year 3	Year 4	Year 5	Total
CHANGE IN (CONSUMPTION									
Reduced input	t volume				20%	40%	60%	80%	100%	300%
Volume		m ³ /annum	177 600		35 520	71 040	106 560	142 080	177 600	532 800
Amount		R / annum	177 600	R 3.50	R 124 320	R 248 640	R 372 960	R 497 280	R 621 600	R 1 864 800
Increased reve	enue water				20%	40%	60%	80%	100%	300%
Volume		m ³ /annum	201 727		40 345	80 691	121 036	161 382	201 727	605 182
Amount		R / annum	201 727	R 7.00	R 282 418	R 564 837	R 847 255	R 1 129 673	R 1 412 092	R 4 236 275
Total		R / annum			R 406 738	R 813 477	R 1 220 215	R 1 626 953	R 2 033 692	R 6 101 075

Payback period - years 12.7

WC/WDM Projection summary and targets

Municipality name Maruleng

Water Demand projection	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 5.0% WDM Scenario							4.02	4.02	4.03	4.03	4.04	4.04
Less 7.5% WDM Scenario							4.00	3.99	3.98	3.96	3.95	3.94
Less 10.0% WDM Scenario							3.98	3.95	3.92	3.89	3.86	3.83
Actual Demand	3.33	3.21	3.40	3.61	3.60	3.82	4.05					
High population No WDM							4.05	4.09	4.13	4.17	4.21	4.26
Licenced abstraction	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44	4.44

Savings	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 5.0% WDM Scenario							0.03	0.07	0.10	0.14	0.18	0.21
Less 7.5% WDM Scenario							0.05	0.10	0.15	0.21	0.26	0.32
Less 10.0% WDM Scenario							0.07	0.14	0.21	0.28	0.35	0.43
Actual savings							0.00					

% Reduction	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 5.0% WDM Scenario							0.83%	1.67%	2.50%	3.33%	4.17%	5.00%
Less 7.5% WDM Scenario							1.25%	2.50%	3.75%	5.00%	6.25%	7.50%
Less 10.0% WDM Scenario							1.67%	3.33%	5.00%	6.67%	8.33%	10.00%

Year / Year % Growth	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 5.0% WDM Scenario								0.2%	0.1%	0.1%	0.3%	0.3%
Less 7.5% WDM Scenario								-0.3%	-0.3%	-0.3%	-0.6%	-0.7%
Less 10.0% WDM Scenario								-0.7%	-0.7%	-0.8%	-1.6%	-1.6%
Actual Demand		-3.6%	6.0%	6.0%	-0.1%	6.0%	6.0%					
High population No WDM								1.0%	1.0%	1.0%	1.0%	1.0%

Key Performance Indicators	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Population (DWA, NIS)	96 358	97 066	97 647	98 377	98 966	104 904	111 198					
Households (DWA, NIS)	21 044	21 201	21 328	21 486	21 614	22 911	24 285					
l/c/d	95	91	95	100	100	100	100					
m3/hh/month	13	13	13	14	14	14	14					
Demand MI/day	9	9	9	10	10	10	11					



Strategy & Business Plan_Maruleng/Projections WRP Consulting Engineers Pty Ltd

l/c/d

– Linear (l/c/d)

----- Linear (m3/hh/month)

m3/hh/month



WCWDM STRATEGY : RPMS Compliance

Municipality name Maruleng

Key questions from the Regulatory Performance Measurement System (RPMS) related to WC/WDM

KPI		ID	WSA Value
KPI 1 – /	Access to Water		
KPI 2 – /	Access to Sanitation		
KPI 3 – /	Access to Free Basic Water		
	Total poor households receiving Free Basic Water for last financial year	ID:012	
	Total poor households	ID:013	
KPI 4 – /	Access to Free Basic Sanitation		
	Total poor households receiving Free Basic Sanitation for last financial year	ID:014	
	Total poor households	ID:013	
KPI 5 – I	Drinking Water Quality		
KPI 6 –V	/astewater Quality		
KPI 7 - 0	Sustomer Services Standards		
Compor	ent 1 – Service Interruptions		
	Total number of Service interruptions in the last financial year	ID:034	
	Number of interruptions in continuous service to consumers, where interruption for a single incident was greater than 24h	ID:033	
Compor	ent 2 – CRM Systems		
	Does the WSA have a customer Charter	ID:036	
	Does the WSA have a customer service centre	ID:035	
	Is there a system to manage customer queries and log faults	ID:038	
	Does the incident tracking system escalate complaints if not responded to within a prescribed time?	ID:037	
KPI 8 - II	Institutional Effectiveness		
Compor	ent 1 - Institutional Effectiveness		
Compor	Completed WSDP is approved by Council for the last financial year?	ID:039	
	Required policies are in place and approved by Council?	ID:040	
		ID:040	
	Contracts and Service level agreements in place with all appropriate service delivery role players (MSDs, internal etc.)		
	The WSA mentions the KDIe defined by the contract or SLA2	ID:042	
0		ID.043	
Compor	lent z - water Services Stan Effectiveness	10:045	
		ID:045	
		ID:040	
•		ID:076	
Compor	ent 3 - Grant Funding Effectiveness	15.040	
	I otal grant funding allocation received for the last financial year	ID:048	
	Total grant funding allocation spent for the last financial year	ID:047	
Compor	ent 4 - WSA Annual Report		
	WSA annual report submitted to Minister	ID:077	
Compor	ent 5 - % Filled Posts on Organogram		
	Total number of posts on Council-approved organogram for the last financial year for water services staff	ID:080	
	Total number of posts filled on the approved water services organogram in the last financial year	ID:079	

KPI 9 - Financial Performance		
Component 1 – Financial Integrity		
Is WSA ring-fenced? (Separate legal entity=3, Separate accounting entity=2, Partially ring-fenced=1, Not ring-fenced at all=0)	ID:049	
Audit report evaluation. (Unqualified=4, Qualified=3, Adverse=2, Disclaimer=1, No report=0)	ID:050	
Component 2 – Average Debtor Days		
Water Services sales income for the last financial year (water/sanitation)	ID:052	
Total outstanding customer/consumer debt for water and sanitation for the last financial year	ID:051	
Component 3 – Revenue Collection Effectiveness		
Water Services sales income for the last financial year (water/sanitation)	ID:052	
Water Services billed income actually received from consumers for last financial year	ID:053	
Component 4 – Average Creditor Days		
Total bulk water purchases for the last financial year	ID:055	
Total bulk water accounts outstanding for the last financial year		
Component 5 – Financial Sustainability		
Total water and sanitation income for the last financial year	ID:056	
Total cost of water and sanitation provision for the last financial year including interest and depreciation (expenditure)	ID:046	
Component 6 – Financial Effectiveness		
Total outstanding customer/consumer debt (after provisions) for water and sanitation for the last financial year	ID:051	
Total provision for doubtful debt for water and sanitation for the last financial year	ID:082	
KPI 10 Strategic Asset Management		
Component 1 - Capital Spent on Rehabilitation and Replacement		
Total capital budget (Water and Sanitation) in the last financial year	ID:063	
Total capital spent on refurbishment and replacement in the last financial year	ID:062	
Component 2 – Asset Management Effectiveness		
Asset management plan status	ID:057	
Asset register status	ID:058	
Asset management system is electronic	ID:059	
Component 3 – O&M Expenditure		
Total spent on O&M/Annual maintenance cost (Water and Sanitation) in the last financial year	ID:060	
Replacement value of assets (water services infrastructure)	ID:061	
Component 4 – Replacement Saving		
Depreciation value for the last financial year (Water and Sanitation infrastructure)	ID:065	
Contribution to asset replacement fund for the last financial year. (Water and Sanitation)	ID:064	
Component 5 – Asset Register Monitoring		
Asset register field monitored: Date acquired	ID:066	
Asset register field monitored: Estimated remaining life of asset	ID:068	
Asset register field monitored: Replacement value of asset	ID:070	
Asset register field monitored: Purchase cost of asset	ID:069	
Asset register field monitored: Description of asset (Yes/No)	ID:067	
KPI 11 Water Demand Management		
System input volume (external sources) for the last financial year	ID:121	
System input volume (own sources) for the last financial year	ID:122	
Total billed metered water consumption (volume) for the last financial year	ID:071	
Total billed unmetered water consumption (volume) for the last financial year	ID:074	
Total unbilled metered water consumption (volume) for the last financial year	ID: 073	
Total unbilled unmetered water consumption (volume) for the last financial year	ID: 123	
ADDITIONAL QUESTIONS FOR WATER USE EFFICIENCY		
Water Conservation and Water Demand Management plan		

Installation of water officiant davisor		
Repair of leaks		
Measurement or control of water supplied		
Pressure management		
Additional KPI : Tariff Data		
Which of the listed elements are taken into account when you determine your tariff? Indicate from the list provided	ID: 201	
Total amount of subsidies allocated to water for the next financial year	ID: 202	
Total projected cost of water provision for the next financial year	ID: 203	
Does your tariff recognise the difference between levels of service (according to Regulation 4 under s10 of the Water Services Act)?	ID: 204	
Does your tariff recognise the difference between socio-economic status of customers (according to s10 of the Water Services Act)?	ID: 205	
Do you charge a rising block tariff?	ID: 206	
How many blocks are in your tariff structure?	ID: 207	
What is your approved standard tariff? (Basic levy)	ID: 208	
What are the actual 2010/2011 tariffs for the following consumer categories?	ID: 209	
Do you reflect your tariff structure on your bill?	ID: 210	
What are the quantities of water supplied to the following consumer categories (annually)?	ID: 211	
What is the unit number of consumers served with water in each consumer category?	ID: 212	
Do you have a seasonal tariff in your WSA?	ID: 213	
Does your tariff include a fixed charge?	ID: 214	
If a fixed charge is levied, do you subsidise the FBW?	ID: 215	
What other sources of water services revenue (other than tariffs) does your WSA have? Indicate sources on the list provided	ID: 216	
Total annual water services surplus / deficit	ID: 217	



water affairs

Department: Water Affairs REPUBLIC OF SOUTH AFRICA

Department of Water Affairs : Rapid Response Unit

Water Demand Management Strategy and Business Plan

for Mopani District Municipality

May 2013

WCWDM STRATEGY AND BUSINESS PLAN: Signature Page

Title :	Development of a First Order Water Conservation and Water Demand Management Strategy and Business Plan for Mopani District Municipality				
Authors :	WA Wegelin, Z Siqalaba, N Z	WA Wegelin, Z Siqalaba, N Zondo			
Study Name:	Development of a First Order Various Municipalities under	Water Conservation and Wat the DWA Rapid Response Pro	er Demand Management Strate ogramme : Limpopo Province	egy and Business Plan for	
Status of Report :	Final draft				
Consultants :	WRP Consulting Engineers	(Pty) Ltd			
Approved for Consultants :	Study leader	WA Wegelin, PrEng			
	Position	Name	Signature	Date	
Municipality	Mopani District Municipali	ty			
Approved for municipality :	Municipal Manager				
	Position	Name	Signature	Date	
Department of Water Affairs	Limpopo Region				
Approved for Regional Office :					
	Position	Name	Signature	Date	
Department of Water Affairs	Head Office				
Approved for Head Office					
	Position	Name	Signature	Date	

WCWDM STRATEGY AND BUSINESS PLAN: Contact details

Province	Limpopo	WSA	No
Municipal Code	DC33	Category	C1
District Municipality	Mopani		
Municipality	Greater Giyani LM, Greater Letaba LM, Greater Tzaneen LM, Ba-Phalaborwa LM, Maruleng LM		
Settlements			

Information provided by				
Date	29/02/2012			
Contact person	Albertina Rammalo			
Position	Technical Manager			
Telephone	072 494 5758			
E-mail	rammaloa@gmail.com			
Study team contact				

Company	WRP Consulting Engineers		
Address	PO Box 1522, Brooklyn Square, 0075		
Contact person	Mr Willem Wegelin		
Telephone number	012 346 3496	Cell number	083 4477 999
E-mail	willemw@wrp.co.za		

Water Affairs contact					
Directorate	Limpopo Regional Office				
Address	Private Bag X9506, Polokwane, 0700				
Contact person	Ms Motlatso Machaba				
Telephone number	(015) 290 1272 Cell number 082 885 6125				
E-mail	machabamo@dwa.gov.za				

Water Balance Data Confidence Level (see legend below)			
Input volume	Estimated values		
Authorised consumption (Engineering functions)	Estimated values		
Meter reading and billing (Finance functions)	Estimated values		
Legend			
High level of accuracy	Calibrated bulk meters, >98% of consumers are metered < 10 years old, <2% billing complaints		
Medium level of accuracy	Functional bulk meters, >90% of consumers are metered, <10% billing complaints		
Low level of accuracy	Some functional bulk meters, >50% consumer meters, any age, meter reading & billing dysfunctional		
Estimated values	No bulk or consumer meter readings, best estimate of water consumption		
No data	No data and no idea of water consumption		

WCWDM STRATEGY AND BUSINESS PLAN: Executive Summary

WSA

Yes

Province Limpopo

Municipal Code	DC33				Category	C1
District Municipality	Mopani					
Municipality	Mopani					
Settlements						
		Executive				
		Executive	summary			
Status quo						
Limited WCWDM activities are und	ertaken in the WSA a	nd there is little	management info	rmation available	to perform a prop	er assessment of
the water losses and potential savi	ngs. The assessment	is inline with R	PMS, Drop assess	sments and the W	SDP.	
and cost recovery in the WSA The	ourrent metering hi	e in a relatively : Iling and cost re	smaller area withi	n the District which	in enables limited	metering, billing
The engineering departments in th	e Local Municipalities	are characteris	sed by high vacan	cies and low capa	citv and skills.	
The current estimated unit consum	ption of 164 l/c/d is a	cceptable but li	mited further redu	ction is expected	as it will go towar	ds improved
LOS and redistribution.		-			-	
The relationship with the communi	ty is generally positiv	ve and the comm	nunities themselv	es are characteris	ed by high unemp	loyment and a
large indigent population. The wat	er tariffs do not prom	ote WCWDM an	id is not cost refle	ctive and consum	ers do not value w	ater very much.
Stuate m.						
Strategy	ropor rocording koor	ing analysis a	ad dovelopment of	f datailed menage	ment information	Allycooncion
must be filled as a matter of priorit	v together with skills	transfer and ca	na development of	he engineering an	d finance departm	All vacancies
closer together to improve meterin	a, billing and cost red	coverv and start	with a meter audi	it to resolve the hi	ah NRW. A steerii	na committee
should be setup to report on a mor	thly basis to council	on water loss fi	igures, leaks repai	ired, targets, prog	ress, consumer m	etering, billing
and cost recovery.						
Proper metering, billing and cost re	ecovery should be su	pported by com	munity awarenes	s that promotes re	porting of leaks, f	ixing of private
leaks and efficient use. Based on	the estimated availab	le information, a	a target reduction	in NRW of 52.6%	down to 39.5% and	d target input
volume reduction of 13.1% have be	en set. The water tar	d improvement	es not promote WC	SWDM and is not i	based on a proper	analysis. The
inuncipality should work towards	RPING Compliance an	a improvement	of their wode.			
Business Plan						
The budget requirements for the n	ext five years are sum	marised in the	table below:			
	ski nito jouro uro cun					
Intervention	Voor 1	Voor 2	Voor 3	Voor 4	Voor 5	Total
	1 575 000	1 075 000	1 075 000	575.000	575 000	4 875 000
Financial	13 980 000	13 880 000	43 880 000	43 780 000	/3 780 000	219 300 000
Social	21 508 000	21 508 000	21 008 000	21 008 000	21 008 000	106 400 000
Technical	21 390 000	83 261 300	27 098 800	27 483 800	27 483 800	400 074 000
Total	150 999 300	149 814 300	144 051 800	142 936 800	142 936 800	730 739 000
	130 333 300	143 014 300	144 031 000	142 330 000	142 330 000	130 133 000
Compliance						
Results from the Resultance	ormanco Moacurom	ont System (B)	DMC)			
Results from the Regulatory Peri	ormance weasurem	ient system (K	P1V13)			
				Achieved KPI		Performance
Кеу	Performance Indicato	ors		Score	Required score	assessment
KPI 1: Access to water supply				3.165	3	Adequate
KPI 2: Access to sanitation				3.125	3	Adequate
KPI 3: Access to Free Basic Water				2.689	3	Concern
KPI 4: Access to Free Basic Sanita	tion		KPI 5. Access to Free Dasic Water			
KPI 5: Drinking Water Quality mana	INFLIER AUGUSS TO FIEE DASIC Satillation U 3 Crisis					
KPI 6: Wastewater quality management					3	Crisis
KPI 6: Wastewater quality manager	agement ment			0	3	Crisis Concern
KPI 6: Wastewater quality manager KPI 7: Customer service quality	agement ment			0 2 1.75	3 3 3 3	Crisis Concern Concern
KPI 6: Wastewater quality manager KPI 7: Customer service quality KPI 8: Institutional effectiveness	agement ment			0 2 1.75 3.343	3 3 3 3.5	Crisis Concern Concern Co <u>ncern</u>
KPI 6: Wastewater quality manager KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance	agement nent			0 2 1.75 3.343 2.929	3 3 3 3.5 4	Crisis Concern Concern Concern Concern
KPI 6: Wastewater quality manager KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance KPI 10: Strategic asset managemen	agement ment			0 2 1.75 3.343 2.929 4.534	3 3 3 3.5 4 3	Crisis Concern Concern Concern Concern Excellent
KPI 6: Wastewater quality manager KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance KPI 10: Strategic asset managemer KPI 11: Water use efficiency	agement nent nt			0 2 1.75 3.343 2.929 4.534 No data	3 3 3 3.5 4 3 3	Crisis Concern Concern Concern Concern Excellent No data
KPI 6: Wastewater quality manager KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance KPI 10: Strategic asset managemen KPI 11: Water use efficiency	agement nent nt			0 2 1.75 3.343 2.929 4.534 No data	3 3 3.5 4 3 3 3	Crisis Concern Concern Concern Concern Excellent No data
KPI 6: Wastewater quality manager KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance KPI 10: Strategic asset managemen KPI 11: Water use efficiency	agement ment nt			0 2 1.75 3.343 2.929 4.534 No data	3 3 3 3.5 4 3 3	Crisis Concern Concern Concern Excellent No data
KPI 6: Wastewater quality manager KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance KPI 10: Strategic asset managemen KPI 11: Water use efficiency Results from Blue and Green Dro	agement ment nt pp Assessments		2000	0 2 1.75 3.343 2.929 4.534 No data	3 3 3 3.5 4 3 3 3	Crisis Concern Concern Concern Excellent No data
KPI 6: Wastewater quality manager KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance KPI 10: Strategic asset managemen KPI 11: Water use efficiency Results from Blue and Green Droc Assessment Blue drop	agement nent nt op Assessments		2009 Foiled	0 2 1.75 3.343 2.929 4.534 No data	3 3 3 3.5 4 3 3 3 2011	Crisis Concern Concern Concern Excellent No data
KPI 6: Wastewater quality manager KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance KPI 10: Strategic asset managemen KPI 11: Water use efficiency Results from Blue and Green Droc Assessment Blue drop	agement nent nt op Assessments		2009 Failed	0 2 1.75 3.343 2.929 4.534 No data 2010 74.50%	3 3 3 3.5 4 3 3 3 2011 63.87%	Crisis Concern Concern Concern Excellent No data 2012
KPI 6: Wastewater quality manager KPI 7: Customer service quality KPI 8: Institutional effectiveness KPI 9: Financial performance KPI 10: Strategic asset managemen KPI 11: Water use efficiency Results from Blue and Green Droc Assessment Blue drop Green drop	agement ment nt pp Assessments		2009 Failed Failed	0 2 1.75 3.343 2.929 4.534 No data 2010 74.50%	3 3 3 3.5 4 3 3 3 2011 63.87% 51.60%	Crisis Concern Concern Concern Excellent No data 2012

WCWDM STRATEGY AND BUSINESS PLAN: Municipal Water Conservation and Water Demand Management Implementation Process Map

Strategy and Planning Phase Performed by WCWDM Strategy Steering Committee (MEC. Municipal Manager, Technical and Financial Directors)				Implementation Performed by Department	Monitoring and Review Performed by Department	
Reviewed by SSC and DWA				Reviewed by SSC and DWA	Reviewed by SSC and DWA	
Vision	Mission	Status Quo Technical	Strategy Technical	Business Plan Technical	Implementation All Projects	Deliverables Technical
Water Services Act, 108 of 1997 Provide water services in an efficient, affordable, equitable, economical and sustainable manner to all consumers	Presidential Target (State of the Nation address 2010) Reduce water Losses by half by 2014	Information on demographics, demands, water loss, level of service Key water loss contributing factors Key performance indicators and targets Asset value and condition Departmental organogram	SWOT Analysis : Strengths, Weaknesses, Opportunities & Threats of technical department (human resources, processes, Goals and objectives: Achieving water loss reduction target in terms of available resources and non- revenue water. If no target exists, then goal is to develop a target. How : identify key principles to achieve target (user pay, water restrictions, consumer education, etc.) Actions : Responsible person, measurement and timelines to address SWOT analysis	Bulk metering Leakage control and repair Sectorisation and zone metering Logging and water loss monitoring Non domestic and domestic metering and audits Resolve intermittent supply Pressure management Clean out and recommission existing infrastructure Training and capacity building	Council approval of Strategy and Business Plan Identify key stakeholders - setup working committees Appoint PSP Appoint contractor Assess / determine baseline	Record keeping and reporting process Monthly IWA Water Balance calculation for system and DMA No visible leakage Asset management Comply with Regulations R509 of 2001 Responsible WCWDM individual/unit Measurement against goals
jurisdiction.		Economic Tariffs Metering, billing and revenue collection status Existing sources of funding	Economic SWOT Analysis : Strengths, Weaknesses, Opportunities and Threats of funding sources Goals and objectives: Allocate sufficient funding to address WCVDM How : identify key principles to obtain funding (improved metering and billing, cost recovery, external funding, etc.) Actions : Responsible person, measurement and timelines to address SWOT analysis	Economic Review tariff structure Ensure effective metering and billing system Review CAPEX budget in terms of WDM goals Review OPEX budget in terms of WDM goals Develop business plan for external funding Training and capacity building	Implement interventions Project Quality Control Project Financial Management Establish record keeping and reporting processes Assess benefits from implementation Establish take-over procedure	Economic Sufficient budget allocation Realistic tariff setting Efficient meter reading, billing and cost recovery process Measurement against goals
BIG HAIRY AND AUDACIOUS VISION If it doesn't scare you, its not big enough		Social Customer profile Communication dynamics between WSA and consumers Existing support structures for consumers Level of stakeholder involvement	Social SWOT Analysis : Strengths, Weaknesses, Opportunities and Threats of consumers and institution Goals and objectives: Informed and supportive consumer and institution How : Identify key principles to develop turn consumers into customers (political, schools, specific consumer groups, water wise, etc.) Actions : Responsible person, measurements and timelines to address SWOT analysis	Social Raise awareness at political levels Raise awareness at institutional levels Identify and engage relevant stakeholders Establish customer care centre Training and capacity building Conduct WC/WDM education and awareness Conduct schools awareness campaigns	Training and capacity building	Social Political support Institutional support Informed, involved and supportive consumer Measurement against goals
		Institutional Existence of approved policies Existence of approved bylaws Regulatory compliance Legislative compliance	Institutional SWOT Analysis : Strengths, Weaknesses, Opportunities and Threats of policies, bylaws, political support, enforcement, Regulatory compilance Goals and objectives: Reform organisation to support WCWDM How : Identify key principles to obtain improve (improved political support, policies, enforcement, etc.) Actions : Responsible person, measurement and	Institutional Establish policies in terms of payment for services, arrears, Establish bylaws that addresses water loss reduction and efficiency Succession planning - ensure initiatives continue		Institutional Approved policies Approved bylaws enforcement Regulatory compliance Succession plan Measurement aga

Review and update strategy and business plan . Implement and regulate.

WCWDM STRATEGY : Definitions

Terminology

	-	
Acronym	Description	Link
DWA	Department of Water Affairs	http://www.dwa.gov.za
WS RPMS	Water Services : Regulatory Performance Measurement System	http://www.dwa.gov.za/dir_ws/rpm/
WS NIS	Water Services : National Information System	http://www.dwa.gov.za/dir_ws/wsnis/
FBS	Water Services : Free Basic Water Project	http://www.dwaf.gov.za/dir_ws/fbw/
NRW	Non-revenue water. Volume of water for which no revenue is received (preferred term)	
UAW or UFW	Unaccounted-for water. Volume of water lost due to physical and apparent losses (not preferre	d term)
StatsSA NFC	Statistics South Africa : Non-Financial Census of Municipalities P9115	http://www.statssa.gov.za/

Information sources

Item	Source	Calculation
Population	DWA WS NIS or municipality	
Households	DWA WS NIS or municipality	
Connections - metered	Extrapolated 2007 DWA - WS FBW serviced above RDP or municipality	
Connections - Unmetered	Extrapolated 2007 DWA - WS FBW serviced at RDP or municipality	
Length of mains (km)	Actual value or calculated at average of 50 connections / km of mains	# connections ÷ 50
(A) System input volume	Total volume of potable water supplied by the municipality in kl/annum	
(B) Billed metered consumption	Total volume of water metered and billed by the municipality in kl/annum	
(C) Billed unmetered consumption	Total volume of water unmetered and billed by the municipality in kl/annum	
Underlined values	Calculated values using trends or averages	

Standard IWA Water Balance

 SYSTEM INPUT VOLUME: 1 + 2 + 3 Total water treated and measured at treatment works outlet Total water pumped directly from boreholes into reticulation system Total water purchased from bulk water services provider 	AUTHORISED CONSUMPTION: 1 + 2 + 3 + 4 Total water used for legitimate purposes 1. Billed metered water 2. Billed un-metered water 3. Unbilled metered water	BILLED METERED: 1. Water is billed for based on a metered consumption (see further explanatory notes). BILLED UN-METERED: 1 + 2 1. Water is billed for based on a flat rate tariff (ie. Not based on a meter reading) 2. Free basic water used through unbilled un-metered stand pipes or yard connections (see further explanatory notes)	REVENUE WATER: 1 + 2 1. Billed metered 2. Billed un-metered
	 Unbilled un-metered water 	UNBILLED METERED: 1. Usually very small in RSA, can include government buildings or parks that is metered but not billed. UNBILLED UN-METERED:	
		 Estimated water used for legitimate purposes such as fire fighting. Also usage above free basic water for un- metered unbilled standpipe and yard connection usage. (see notes) 	NON REVENUE WATER: 1 + 2 + 3 + 4
Unaccounted for Water (UAW / UFW)	TOTAL LOSSES: 1 + 2 Total water not used for legitimate purposes 1. Apparent losses 2. Real losses	APPARENT LOSSES: 1 + 2 + 3 1. Water used through illegal connections 2. Water used but not billed for because of inaccurate meters 3. Water used but not billed for because of data transfer errors, low estimated readings or any administrative errors. REAL LOSSES: 1. Water that leaks from the system through pipes and connections or overflows from reservoirs	 Unbilled metered Unbilled un-metered Apparent losses Real losses

Apparent Losses

Illegal connections	%	Water Quality	Meter age and accuracy	%	Data transfer	%
Very high	10%	Very poor	> 10 years	10%	Very poor	9%
High	8%	Poor		8%	Poor	7%
Average	6%	Average	5-10 years	6%	Average	5%
Low	4%	Good		4%	Good	3%
Very low	2%	Very good	< 5 years	2%	Very good	1%

WCWDM STRATEGY : Base Information

Mun	<mark>iicipality name</mark> Greater Giyani L	.M, Greate	r Letaba LM, Greate	er Tzaneen LM, Ba-Phalabo	Date of current data	2012
				Current	Target	Change
	Demographics	WSDP Ref				
	Population	Par 2.4	No	1 200 681	1 200 681	0
	Urban		No	216 123	216 123	
	Rural		No	984 558	984 558	
	Households	Par 2.4	No	282 863	282 863	0
	Urban		No	50 915	50 915	
	Rural		No	231 948	231 948	
	Household density		Pop / HH	4.30	4.24	
	Growth rate: 5 years	Par 4.1.3	%			0
	Consumer units	Par 3.3	No	199 813	199 813	0
	Residential		No	199 091	199 091	
	Police stations		No	31	31	
	Magistrates Offices		No	9	9	
	Business		No	0	0	
	Dry industries		No		0	
			No		0	
	Prisons		No	1	1	
	Schools		No	647	647	
	Health facilities		No	34	34	
	Wet industries		No	54	54	
	Mining		No		0	
	Resorts and tourism		No		0	
			INU		0	
	Water Level of Service	Par 3 1	no	199 099	100 000	0
	Stand nines	rai J.i	нн	155 055	155 055	0
	Vard connections			100.000	100.000	0
	House connections			133 033	133 033	
	Longth of mains (km)	Dar 5 1 2	km	3 082 0	3 082 0	0
	Connections / km of mains	F al J.1.2	No / km	5 502.0	5 502.0	0
ata			NU / KIII	30.0	30.0	0
nt D	Time proscurised		0/	40	40	0
dul	Sanitation Lovel of Service	Dor 2.2	70	160 152	160 152	0
	None water borne	rai J.Z	No	1/3 2/0	143 240	U
	Water borne low flush		No	143 249	143 249	
	Soptio tanks / conson/anov		No	845	845	
	Water berne W/TW		No	14 368	14 368	
			0/	14 300 17 %	14 300 17 %	0%
	Consumer motor ago		70 0/_	6%	6%	0%
			/0	6%	6%	0%
	Data transfer		/0 0/2	6% 5%	678 5%	0%
	Water balance data		/0	J /0	J /0	0 /0
	System input volume		kp/annum	7/ 802 000	73 305 060	-1 406 040
			k@/annum	74 802 000	73 305 900	-1 490 040
	Other sources		k@annum	14 002 000	10 000 900	-1 450 040
	Billed metered consumption		k@annum	3E 103 E10	U 44 254 207	0 070 070
	Billed upmotored consumption		k@annum	ა ე 40 ა ე18 ი	44 304 39/	0 0/0 8/9
	Unbilled metered consumption		k@annum	0	0	0
	Unbilled unmetered consumption		k@annum	000 010	700 000	110 220
	onshied unmetered consumption		KC/allfiuffi	045 380	133 000	-110 320

	Water Tariffs				
	Purchase of bulk water Par 10	R/annum	R 72 000 000	R 72 000 000	R 0 00
	Total operating cost	R/annum	R 374 000 000	R 374 000 000	R 0.00
	Pate - Purchase of bulk water	D/kg	#DIV/01	#DIV/01	10.00
	Pate - Total operating	D/ke	#DIV/0:	#DIV/0:	
	Domestic Water Tariffs Par 10		K J.00	K J.10	
	Domestic Water familis Fai 10.	k R/month	D 2 17	D 2 17	B 0 00
	0 18	kC/month	R 3.17	R 3.17	R 0.00
	to	Ke/month	R 3.17	R 3.17	R 0.00
	to	ke/month	K 3.31	R 3.31	R 0.00
	to	kt/month			R 0.00
	to	kt/month			R 0.00
	> to	k@/month	R 3.60	R 3.60	R 0.00
			74 000 000	70.005.000	4 400 0 40
	System input volume	kt/annum	74 802 000	/3 305 960	-1 496 040
	Authorised Consumption	kť/annum	36 326 898	45 087 456	8 760 559
	Billed authorised	k@/annum	35 483 518	44 354 397	8 870 879
s	Billed metered	kℓ/annum	35 483 518	44 354 397	8 870 879
tior	Billed unmetered	k€/annum	0	0	0
cula	Unbilled authorised	k€/annum	843 380	733 060	-110 320
Cal	Unbilled metered	k€/annum	0	0	0
JCe	Unbilled unmetered	k€/annum	843 380	733 060	-110 320
alar	Water losses	k€/annum	38 475 103	28 218 504	-10 256 599
E E	Apparent losses	k€/annum	6 540 767	4 797 146	0
Vate	Real losses	k€/annum	31 934 335	23 421 358	-10 256 599
>	UARL	k€/annum	3 034 747	3 371 941	0
	Potential real loss saving	k€/annum	28 899 588	20 049 417	-10 256 599
	Revenue water	k€/annum	35 483 518	44 354 397	8 870 879
	Non-Revenue water	k€/annum	39 318 483	28 951 563	-10 366 919
	System input volume unit consumption				
	litres / capita / day	€/c/d	171	167	-4
	m ³ / household / month	m ³ / hh / month	22	22	0
	m ³ / connection / month	m ³ / conn / month	31	31	0
	Authorised unit consumption				
	litres / capita / day	ℓ/c/d	83	103	20
	m ³ / household / month	m ³ / hh / month	11	13	2
	m ³ / connection / month	m ³ / conn / month	15	19	4
	Water loss indicators				
	UARL : Losses / connection / day	ℓ / conn / dav	42	46	5
tors	CARL : Losses / connection / day	ℓ / conn / day	439	322	-117
licat	Infrastructure Leakage Index (II I)	-	10.52	6.95	-4
pul	Losses / km mains / day	m ³ /km/dav	22.0	16.1	-6
nce	Non-revenue water	%	52.0	30.5%	-0 -13 1%
rma.	Unbilled Consumption	0/2	1 10/	1.0%	-13.1/0
lifo	Water Losson	/0	51 /0/	29.5%	-0.170
y Pe		/0	0 70/	50.5%	- 12.9%
Ke	Real leases	70	0.1%	0.0%	-2.2%
	Water balance reduction torgets	70	42.1%	52.0%	-10.7%
	Sustem input volume	0/		0.00/	
	System input volume	%		-2.0%	
	Authorised Consumption	%		24.1%	
	Billed authorised	%		25.0%	
	Billed metered	%		25.0%	
	Billed unmetered	%		0.0%	
	Unbilled authorised	%		-13.1%	
	Unbilled metered	%		0.0%	
	Unbilled unmetered	%		-13.1%	
lysi	Average monthly water bill / connection	R / conn / month	R 54	R 68	R 14
Ana.	Estimated annual income	R / annum	R 129 016 152	R 163 420 459	R 34 404 307
st /	Total water supply cost	R / annum	R 374 000 000	R 374 000 000	R 0
ŭ	Net profit / loss	R / annum	-R 244 983 848	-R 210 579 541	R 34 404 307
	Town and description	Source	MI/day	m ³ /annum	million m ³ /annum

e and oacity	Mopani + Lepelle Water	Blue Drop 2011	182.60	66 649 000	66.649
	Tzaneen	Blue Drop 2011	16.50	6 022 500	6.023
urc. Ca	Giyani	Blue Drop 2011	32.10	11 716 500	11.717
r So					0.000
ater					
,≍ E					
	Total		231.20	84 388 000	84.388

Current IWA Water Balance Diagram (million m ³ /annum)								
	Authorised consumption = 36.327	Billed authorised = 35.484	Billed metered = 35.484	Revenue water = 35.484				
System Input Volume = 74.802		Apparent losses = 6.541	Apparent losses = 6.541					
	Water losses = 38.475	Real Losses = 31.934	Real Losses = 31.934	Non-revenue water = 39.318				

Target IWA Water Balance Diagram (million m ³ /annum)									
System Input Volume = 73.306	Authorised consumption = 45.087	Billed authorised = 44.354	Billed metered = 44.354	Revenue water = 44.354					
		Apparent losses = 4.797	Apparent losses = 4.797						
	Water losses = 28.219	Real Losses = 23.421	Real Losses = 23.421	Non-revenue water = 28.952					
		Neudceu Input Volume – 1.490							

WCWDM STRATEGY : Water Balance History

Municipality Name Greater Giyani LM, Greater Letaba LM, Greater Tzaneen LM, Ba-Phalaborwa LM, Maruleng LM

		Year ending	Jun-06	Jun-07	Jun-08	Jun-09	Jun-10	Jun-11	Jun-12	Jun-18
	Population		1 123 018	1 129 751	1 138 225	1 145 059	1 062 148	1 072 769	1 200 681	1 274 547
	Households		265 497	267 088	269 096	270 703	251 195	253 707	282 863	300 265
	Connections - met	ered	145 297	146 169	147 265	148 149	137 977	139 356	140 750	149 409
	Connections - Unm	etered	68 023	68 430	68 944	69 356	64 091	64 732	65 379	69 401
Data	Length of mains (km)	4 266	4 292	4 324	4 350	4 041	65 379	66 033	70 095
Input	System input volume	kl/annum	75 093 803	80 962 800	81 748 406	82 534 012	84 338 000	85 121 833	74 802 000	73 305 960
	Billed metered consumption	kl/annum	33 789 177	30 322 055	33 763 030	37 204 005	35 483 518	38 923 312	39 787 326	44 354 397
	Billed unmetered consumption	kl/annum	4 544 112	1 042 084	0	10 800	0	0	0	0
	Unbilled metered consumption	kl/annum	0	0	0	0	0	0	0	0
	Unbilled unmetered consumption	kl/annum	750 938	809 628	817 484	825 340	843 380	851 218	748 020	733 060
ions	Revenue water	kl/annum	38 333 289	31 364 139	33 763 030	37 214 805	35 483 518	38 923 312	39 787 326	44 354 397
alculat	Non-Revenue water	kl/annum	36 760 514	49 598 661	47 985 376	45 319 207	48 854 483	46 198 521	35 014 674	28 951 563
nce Ci	Water Losses	kl/annum	36 009 576	48 789 033	47 167 892	44 493 867	48 011 103	45 347 302	34 266 654	28 218 504
r Bala	% Non-revenue w	ater	P 49.0%	陀 61.3%	P 58.7%	P 54.9%	P 57.9%	P 54.3%	P 46.8%	₱ 39.5%
Wate	% Water Losse	s	陀 48.0%	陀 60.3%	P 57.7%	P 53.9%	56.9%	P 53.3%	P 45.8%	▶ 38.5%
S	Input : Litres / capita	a / day	۴ 183	۴ 196	۴ 197	۴ 197	218 🏱	P 217	P 171	۴ 158
dicator	Input: m³ / household	/ month	24 🏲	و25	و25 🎙	و25 🎙	28 🏱	28 🎙	22 🎙	م 20
nce inc	Billed : Litres / capit	a / day	۶4 🏲	۴ 76	81 🦻	89 🦻	92 🥐	99	۹1 🖗	95 🥐
ormar	Billed : m ³ / household	l / month	۴ 12	۴ 10	۴ 10	۴ 11	۴ 12	۴ 13	P 12	۴ 12
ey perf	% Population gro	wth	0.66%	0.60%	0.75%	0.60%	-7.24%	1.00%	11.92%	5.91%
Ke	% Water demand g	rowth	-3.20%	7.82%	0.97%	0.96%	2.19%	0.93%	-12.12%	-4.86%
	Source of information		DWA NIS StatsSA Adj	DWA NIS StatsSA Adj	DWA NIS Estimated	DWA NIS WSDP	DWA NIS Estimated	DWA NIS Estimated	DWA NIS Estimated	Estimated



WCWDM STRATEGY : Qualitative Scorecard

Municipality Name Mopani

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The purpose of this section is to perform a qualitative evaluation of the municipality's water business. The objectives are as follows :

SWOT Analysis	External - Opportunities Positive external conditions which you don't control which you could take advantage of	External - Threats Negative conditions you don't control but could minimise their effects
Internal - Strengths Positive aspects under your control and on which you may wish to capitalise	Strengths and Opportunities (SO) – Strategies that use strengths to maximize opportunities.	Strengths and Threats (ST) – Strategies that use strengths to minimize threats.
Internal - Weaknesses Negative aspects under your control (to a large extent) which you could plan to improve	Weaknesses and Opportunities (WO) – Strategies that minimize weaknesses by taking advantage of opportunities.	Weaknesses and Threats (WT) – Strategies that minimize weaknesses and avoid threats.

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
1	INSTITUTIONAL REVIEW				
1.1	Water and Sanitation department structure				
1.1.1	Is there an approved organogram for the Water and Sanitation Department?	There is an approved internal organogram which is under review due to the finalisation of the service level agreements.	S	Review the existing organogram once the transfer of functions has been finalised and ensure that it incorporates WC/WDM personnel.	2
1.1.2	What is the vacancy rate in the department and is it a problem?	Each municipality should have 2 technicians to monitor operations. The personnel is very limited due to retirement and the restructuring of the Municipality particularly the general workers. The vacancy rate is approximately 60% in the water services department. A technician is required for each of the satellite offices so management capacity is also required.	т	Advertise and fill the identified critical vacant posts	1
1.1.3	Does the department have the correct technical skills for the correct posts.	The department is correctly skilled. Only human capacity is required. A lot of the staff has been transferred from DWA so the skills are present.	0	Increase management, and O&M capacity through new human resources and support it with WC/WDM training in all Local Municipalities within Mopani District.	1
1.1.4	Is training and capacity building being done?	All water process controllers have been trained up to NQF level 5. No wc/wdm training.	0	Institute a mandatory WC/WDM training programme for technical staff. Invest in team building and workshop sessions incorporating the councillors and municipal management to boost staff morale.	2

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
1.1.5	Are there sufficient support structures ito vehicles, equipment, materials etc.?	Material and vehicles are lacking. Procurement processes are problematic. The available funding should be sufficient to purchase the necessary material but the funds are not being used efficiently. The lack of critical spares is a threat to the system. A store is available to keep the material.	т	Engage with the Department of Finance and allocate an adequate budget for the critical spares. Allocate a specific person who will be responsible for expediting equipment orders and managing quality control in terms of the procurement processes.	2
1.1.6	Does the municipality own any water loss control equipment such as loggers, listening sticks, etc.?				
1.2	Municipal support				
1.2.1	Describe the working relationship with other departments such finance, planning, housing etc.?	The relationship is somewhat challenging. Procurement is the primary challenge. Access to information is easy so in that respect the relationship is positive.	т	Establish a NRW steering committee comprising representatives from the technical, communications and finance departments to improve communication and access to information	1
1.2.2	Are the politicians supporting the department?	The politicians under the water portfolio are very supportive. Tangible actions are however required from the higher levels. Training is required to support them.	0	Undertake a councillor WC/WDM induction programme to capitalise on the existing relationship and build a communication bridge between the municipality and the customers	2
1.3	Public Private Partnerships				
1.3.1	Is there any major industrial or institutional role player in the area and is there co-operation?	There are no major industrial role players. Only the farmers are present.			
1.3.2	If yes, what does the co-operation involve and can it be expanded?	N/A			
1.4	Legislation and bylaws				
1.4.1	Does the municipality have a customer service charter?	No.	0	Develop a customer service charter to ensure the customers are aware of the municipalities commitment and their responsibilities as consumers.	3
1.4.2	What is the status and age of the existing bylaws and do they address water loss management?	The bylaws are in the process of being approved.	0	Review the bylaws and utilise the process to ensure that WC/WDM issues are captured and addressed by the bylaws.	2
1.4.3	Are bylaws enforced and if not, why not?	No bylaw enforcement.	0	Develop partnerships with the credit control and legal departments as well as the SAPS and put appropriate bylaw enforcement mechanisms in place.	2
1.4.4	What is the status and age of Water Services Development Plan?	There is a WDSP 5 year draft which is reviewed annually. EVN was initially appointed to review it.	S	Continue to update and submit the WSDP on an annual basis to aid coherent planning. Ensure that the WSDP is approved by Council.	1
2	FINANCIAL REVIEW				
2.1	Financial Department				
2.1.1	What is your opinion of the Finance Department's ability to perform metering and billing				
2.1.2	Is training and capacity building being done?				

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
2.1.3	What is the state of the municipal metering and billing system?				
2.1.4	What is your primary source of funding?	Grant funding and internal revenue.	т	Focus on improving metering and billing and cost recovery where practicable to reduce dependency on grant funding.	2
2.2	Tariffs				
2.2.1	Who prepares the water tariffs and what is it based on?	Department of finance sets the tariffs. Lepelle water developed the tariffs and all the LM's are using the same tariffs.	0	Ensure that the technical department continuously makes inputs into the tariff setting process.	1
2.2.2	What is the tariff structure and does it promote WCWDM?	The tariff does not really promote WC/WDM.	0	Ensure that the rising block tariff is sufficiently differentiated in cost at each level to promote WC/WDM with the highest tariff at least twice the amount of the lowest tariff. Obtain and utilise the National Treasury tariff setting guidelines	1
2.2.3	Is the water supplied considered affordable by the customers?	Consumers feel the water is affordable	0	Continue ensuring that the tariffs remain affordable particularly for the efficient and low income water users.	3
2.3	Meter Reading and Billing				
2.3.1	Who performs the water meter readings, frequency and accuracy?				
2.3.2	Are the meter readers trained and can they report leakage when encountered on site?				
2.3.3	Is the water bill understandable and informative?				
2.4	Credit control				
2.4.1	Is credit control being implemented and by whom?	Credit control is implemented by the Department of Finance.	0	Through the legal department, develop appropriate credit control enforcement mechanisms to improve revenue recovery	2
2.4.2	What is the current level of non-payment?				
3	SOCIAL REVIEW			<u> </u>	
3.1	Customer profile				
3.1.1	Describe the general consumer profile i.e. Income levels, indigence, unemployment, literacy	Most of the population is indigent and low income with mainly seasonal and permanent agricultural employment.	0	Focus on educating the indigent population on efficient water use and the importance of the free basic allocation as well as its limitations.	1
3.1.2	Describe the relationship between customers and the municipality and reasons?	The consumers are not happy with the quality of service they are receiving. The water supply is uncertain.	т	Engage with the consumers through the councillors and gain their support and cooperation whilst the municipality resolves the water services challenges. Build on the relationship with all the consumers and strengthen it through community awareness campaigns.	1
3.2	Customer awareness				

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
3.2.1	Are consumers informed regarding the value of water?	The consumers are not well informed regarding the value of water.	т	Budget and undertake a continuous annual education and awareness campaign focusing on promoting water use efficiency.	2
3.2.2	What is the level of leakage reporting by the community and what method do they use?	The consumers are not reporting leakage regularly. The common method of reporting is through the ward councillors.	Т	Publicise the customer care services through the councillors, pamphlets attached to water bills and local media to promote reporting of leakage.	2
3.2.3	What are the most prominent consumer behavioural challenges encountered by the municipality?	Vandalism and illegal connections.	т	The community awareness campaign should be tailored to address these problems. The councillors should be encouraged to make these issues an agenda at all public metering held in the different wards.	2
3.2.4	Is xeriscaped gardening and rain water harvesting encouraged?	Letaba had a rain water harvesting programme through DWA. Some work has also been done in specific schools.	ο	As part of a community awareness campaign, encourage consumers to harvest rain water and utilise it for garden irrigation and cleaning to reduce the demand for potable water.	2
3.2.5	Are radio campaigns, bill board, pamphlets, informative billing used to inform and educate customers?	Media campaigns have been conducted for various purposes including publicising the floods.	0	Develop simple visual material in the form of pamphlets which can be used to educate consumers on efficient water use. Build on the media campaign undertaken and periodically publicise water tips on local radio stations and newspapers.	2
3.3	Schools awareness				
3.3.1	Number of primary and secondary schools?				
3.3.2	Frequency and scope of schools awareness campaigns?				
3.3.3	Are goals and objectives monitored and controlled?				
3.4	Customer Care Centre				
3.4.1	Does the municipality have a CCC and who operates it?	There are currently no customer care services, however this is under consideration.	0	Obtained a trained individuals to receive and refer customer complaints and establish a customer care land line. Publicise the call centre and encourage the consumers to become the eyes and ears of the municipality and to report water and sanitation related problems.	2
3.4.2	How and to whom are billing queries referred?				
3.4.3	To whom are the leak reports referred and do consumers have confidence in the reporting system?				
4	TECHNICAL REVIEW				
4.1	Measurement and control				

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
4.1.1	Is the system input volume measured, monitored and controlled?	There is no measurement taking place currently but it will be done once the municipal restructuring has been concluded.	W	Install bulk meters where required as a matter of priority and read them on a monthly basis. Capture the readings on a spread sheet and monitor the input the volume.	1
4.1.2	Is the water supply system sectorised into zones and districts?	In Tzaneen, Letaba and Ba-Phalaborwa sectorisation has taken place. The rural areas are not sectorised.	0	Sectorise the remainder of the network into manageable discrete zones where practicable to improve the monitoring of the network.	2
4.1.3	Are the supply to the zones and districts metered?	Zone metering has taken place in the sectorised areas.	0	Ensure that the zone meters are read on a monthly basis. The readings must be captured on a spread sheet	1
4.1.4	Is the system monitored through a telemetry system?	Very few of the Local Municipalities have telemetry systems in place.	0	Obtain appropriate real time telemetry systems to improve the monitoring of the network.	3
4.1.5	What is the Frequency and detail of your water balance calculation?	No water balance calculations are currently being undertaken.	0	Develop an NRW water balance which must be updated on a monthly basis to monitor water losses. This should ideally be conducted for each of the Local Municipalities.	1
4.1.6	Are minimum night flows, consumption trends and logging used to monitor the system?	No.	0	Consider installing pressure and flow loggers at the zone meters to monitor MNF which will assist to determine the levels of leakage and wastage in each zone and to identify areas where pressure management can take place.	3
4.1.7	Are monthly management reports prepared and key performance indicators measured?	No.	0	Consolidate the available data from the bulk meters and department of finance and compile a monthly NRW report with the relevant KPI's.	1
4.2	Physical leakage				
4.2.1	What is the average age of the network, pipe material, replacement programme?	The infrastructure is very old and comprises primarily asbestos cement pipes. No coordinated replacement programme is currently in place and maintenance is undertaken on an adhoc basis.	Т	Set aside 5% of the CAPEX budget for the replacement of the network.	2
4.2.2	Number of burst pipes reported and repaired per week / month and the average response time?				
4.2.3	What is the primary cause of burst pipes?	High pressures and aging infrastructure. Giyani (Khanyisa bulk line), Tzaneen, Thabina bulk line are particularly problematic in this regard.	т	Allocate a proper budget for replacement and refurbishment. Budget a minimum of 5% of the infrastructure value for this purpose to reduce the risk of system failure. Also consider implementing pressure management in areas with high burst frequencies.	1
4.2.4	Are active leak detection programmes conducted?				
4.2.5	How often and for how long do reservoirs overflow?	Some of the reservoirs are leaking excessively.	w	Acquire appropriate real time telemetry systems to monitor the reservoirs.	1
4.2.6	Are water losses from treatment processes (backwash, etc.) monitored and minimised?				

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
4.2.7	Is leakage on private properties a problem and if so, why?	No.	0	Undertake a leak audit as part of the community awareness campaign and determine the extent of internal plumbing leakage. Consider repairing leaks on indigent properties to decrease NRW.	3
4.2.8	Are leaks on indigent private properties repaired and removal of wasteful devices encouraged?	No.			
4.3	Pressure management and control valves				
4.3.1	What is the average and maximum system pressure?	The supply pressures are very low in most areas.	S	Maintain the satisfactory operating pressure and ensure that operating pressures never exceed the DWA regulatory standard of 9 bar.	3
4.3.2	Is basic or advanced pressure management being implemented?	No pressure management.	0	Identify critical areas experiencing a high frequency of pipe bursts and pressure and install pressure reducing valves.	3
4.3.3	Are control valves pro-actively being maintained to prevent overflowing reservoirs?	No.	w	Existing control valves must be maintained or recommissioned to assist in the monitoring of reservoirs.	1
4.4	Consumer metering				
4.4.1	Are domestic and non-domestic consumers metered and which type of meter is used?				
4.4.2	What is the condition, age and accuracy of water meters?				
4.4.3	Are the top consumers pro-actively monitored on a monthly basis?				
4.4.4	Describe the water quality and its impact on consumer water meters?	The water quality is fair and there are no heavy metals from large industries. Only the farmers can be problematic in terms of the pesticides.	S	Continue to monitor and report on water quality and ensure that it complies with the DWA blue drop standards.	2
4.4.5	What is the prevalence and control of illegal connections?	Illegal connections are a problem in the whole of Mopani.	т	Undertake an illegal connection removal programme. Consider an amnesty programme where consumers with unlawful connections can come forward and report without prosecution.	1
4.5	Management information				
4.5.1	Does the Municipality have an asset register and asset management programme?	There is an asset register which sits with the asset manager in Finance. The register was purely financial however inputs have been made by the technical department which details what must be included in the register. The register is currently under review.	0	Review the asset register system in place. Maintain and update the asset register on an annual basis. Ensure that the asset register provides critical technical information such as the age, value and replacement date of the assets.	2
4.5.2	What is the status and age of as-built drawings?	There are as built drawings which sit with the engineering services department.	0	Develop electronic as built drawings for the whole network.	2

ITEM	CATEGORY	STATUS QUO	SWOT	STRATEGY	PRIORITY
Summary					

SWOT Analysis	Helpful	Harmful
	Approved organogram and service level agreements in place	Lack of management and O&M capacity
	Low operating pressures in most areas	No water loss equipment
Internal factors	Good water quality	No proactive monitoring of water losses in zones
(Staff, infrastructure, tools, equipment)		No Bulk metering
		No proactive asset management and control valve
		maintenance
		Reservoirs leaking excessively
		High burst frequencies in certain areas
		No telemetry
		No bylaw enforcement
	Good relationship with finance but can improve	Very old infrastructure
	Supportive politicians	Insufficient vehicles and material to support O&M
Internal factors	Community and schools Awareness	Dependency on grant funding
(Politics, finance, consumers, economics)	Councillor training programme	Poor relationship with consumers
	Review water tariffs to cover costs	Uninformed community
	Review charters, policies and bylaws to promote WDM	Illegal connections
	Pressure management	No Customer care centre
		Inadequate tariffs

WCWDM STRATEGY : Quantitative Scorecard

Municipality Name Mopani

Introduction

The purpose of the Water Conservation / Water Demand Management (WC/WDM) Scorecard is to ascertain the status quo of WC/WDM and evaluate the potential for WC/WDM measures to be implemented in these systems. The scorecard is also designed to enable the Regulator (Department of Water Affairs) to assess the current situation regarding losses and levels of wastage in all water supply systems countrywide. The scorecard consists of 25 multiple choice questions with each question getting scored from 0 to 4. The Regulator and WSA can track progress with each year the scorecard gets completed. Each question ends with an audit requirement which indicates what will be required by the Regulator should the questionnaire be audited. It also provides an indication on what is required in terms of each of the measures.

Date	Jun-10	Jun-11		Average
1. Development of Standard Water Balance	0			0
2. Pressurised supply to all consumers 100% of time	3			3
3. Residential Metering System	2			2
4. Non Residential Meters (Commercial, Industrial and Institutional)	3			3
5. Effective Billing System & Informative Billing	2			2
A Nature di (Lastana) Associativa A stara	•			•
b. Network (Leakage) Complaints System	2			2
7 Dilling and Materiag Complainte System	2			2
	2			2
8 Asset Register for Water Reticulation System	1			1
	•			
9. Asset Management - Capital Works	0			0
	, , , , , , , , , , , , , , , , , , ,			•
10. Asset Management - Operations and Maintenance	3			3
11. Dedicated WDM support	1			1
12. Active Leakage Control	2			2
13. Effective Sectorisation	3			3
14. Effective Bulk Meter Management	3			3
15. Effective Zone Meter Management and Night Flow Analysis	0			0
16. Pressure Management and Maintenance of Pressure Reducing Valves	4			4
17. As-Built Drawings of Bulk and Reticulation Infrastructure	4			4
18. Scnematic Layout of Water Infrastructure	2			2
40. Descriptions and Dulawa	2			0
19. Regulations and Bylaws	2			2

Date	Jun-10	Jun-11			Average
20. Tariffs	2				2
21. Technical Support to Customers	0				0
22. Removal of Unlawful Connections	1				1
23. Community Awareness and Education Programmes	1				1
24. Schools Awareness and Education Programmes	3				3
25. Newspaper & radio articles plus posters and leaflets for distribution	1				1
Total score (maximum 100)	47		0	0	47



WCWDM STRATEGY AND BUSINESS PLAN : BUDGET AND CASHFLOW

Municipality name Greater Giyani LM, Greater Letaba LM, Greater Tzaneen LM, Ba-Phalaborwa LM, Maruleng LM

COSTS										
	ltem	Unit	Quantity / year	Rate	Year 1	Year 2	Year 3	Year 4	Year 5	Total
INSTITUTION	IAL / LEGISLATIVE INTERVENTIONS									
Institutional re	eview:				100%					100%
CAPEX	Review organogram and fill vacancies	Sum	5	R 200 000	R 1 000 000	R 0	R 0	R 0	R 0	R 1 000 000
OPEX		Sum			R 0	R 0	R 0	R 0	R 0	R 0
Training and e	education :				50%	50%				100%
CAPEX	Not applicable	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Assume one training course / employee / annum	No	100	R 5 000	R 75 000	R 75 000	R 75 000	R 75 000	R 75 000	R 375 000
Customer cha	arter, policy, bylaws :					50%	50%			100%
CAPEX	Review bylaws on 5 year cycles	Sum	5	R 200 000	R 0	R 500 000	R 500 000	R 0	R 0	R 1 000 000
OPEX	Enforce bylaws	Sum	5	R 100 000	R 500 000	R 500 000	R 500 000	R 500 000	R 500 000	R 2 500 000
FINANCIAL INTERVENTIONS										
Effective meter	ering and billing :				50%	50%				100%
CAPEX	Perform meter audit	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Ensure proper metering and billing of all consumers	No	199 000	R 100	R 19 900 000	R 99 500 000				
Water tariffs :					50%		50%	- -		100%
CAPEX	Review water tariffs	Sum	1	R 200 000	R 100 000	R 0	R 100 000	R 0	R 0	R 200 000
OPEX	Not applicable	Sum		R 0	R 0	R 0	R 0	R 0	R 0	R 0
Informative bi	lling :				50%	50%				100%
CAPEX	Improve invoice to show monthly consumption	Sum	1	R 200 000	R 100 000	R 100 000	R 0	R 0	R 0	R 200 000
OPEX	Distribute information with bill	Sum	199 000	R 120	R 23 880 000	R 119 400 000				
SOCIAL INTE	RVENTIONS									
Consumer A	wareness Campaign :				20%	20%	20%	20%	20%	100%
CAPEX	Install bill boards, design pamphlets, radio campaigns	Sum	199 000	R 120	R 4 776 000	R 23 880 000				
OPEX	Target households on monthly basis with awareness cam	No	199 000	R 60	R 11 940 000	R 59 700 000				
Consumer H	elp and Support Desk :				50%	50%				100%
CAPEX	Improve existing help-desk to provide one-stop service	Sum	5	R 200 000	R 500 000	R 500 000	R 0	R 0	R 0	R 1 000 000
OPEX	Maintain help-desk	Sum	5	R 100 000	R 500 000	R 500 000	R 500 000	R 500 000	R 500 000	R 2 500 000
Schools awa	reness :				20%	20%	20%	20%	20%	100%
CAPEX	Prepare schools competition, awareness, retrofit	No	647	R 20 000	R 2 588 000	R 12 940 000				
OPEX	Monthly schools awareness campaign	No	647	R 2 000	R 1 294 000	R 1 294 000	R 1 294 000	R 1 294 000	R 1 294 000	R 6 470 000

TECHNICAL IN	TERVENTIONS									
Bulk metering :					50%	50%				100%
CAPEX	New meter installations required	No	62	R 50 000	R 1 550 000	R 1 550 000	R 0	R 0	R 0	R 3 100 000
OPEX	Maintenance of existing bulk meters	No	62	R 1 000	R 62 000	R 62 000	R 62 000	R 62 000	R 62 000	R 310 000
Sectorisation :		•			50%	50%				100%
CAPEX	Setup of new DMA / PMAs	No	62	R 50 000	R 1 550 000	R 1 550 000	R 0	R 0	R 0	R 3 100 000
OPEX	Maintenance of DMA / PMAs including step testing	No	62	R 25 000	R 1 550 000	R 7 750 000				
Active Leakage	Control :				50%	50%	•		•	100%
CAPEX	Not applicable	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Fix all visible and reported leaks	No	3 982	R 1 000	R 3 982 000	R 3 982 000	R 3 982 000	R 3 982 000	R 3 982 000	R 19 910 000
Valve audits					20%	20%	20%	20%	20%	100%
CAPEX	Locate, clean, repair, document network valves	No	15 928	R 4 000	R 12 742 400	R 63 712 000				
OPEX	Maintain network valves	No	3 186	R 1 000	R 3 185 600	R 15 928 000				
Leak and loggir	ng equipment :	•			50%	25%	25%			100%
CAPEX	Procure basic WDM equipment	Sum	10	R 20 000	R 100 000	R 50 000	R 50 000	R 0	R 0	R 200 000
OPEX	Not applicable	Sum			R 0	R 0	R 0	R 0	R 0	R 0
Telemetry :						50%	50%			100%
CAPEX	Install telemetry sites	No	62	R 15 000	R 0	R 465 000	R 465 000	R 0	R 0	R 930 000
OPEX	Maintain telemetry sites	No	62	R 1 500	R 93 000	R 465 000				
Retrofitting and	removal of wasteful devices :				20%	20%	20%	20%	20%	100%
CAPEX	Retrofit government buildings, schools, etc.	No	39 800	R 1 000	R 7 960 000	R 7 960 000	R 7 960 000	R 7 960 000	R 7 960 000	R 39 800 000
OPEX	Not applicable	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
Mains replacem	nent :		· ·		20%	20%	20%	20%	20%	100%
CAPEX	Replace critical leaking mains	km	79.6	R 100 000	R 1 592 800	R 7 964 000				
OPEX	Not applicable	km		R 0	R 0	R 0	R 0	R 0	R 0	R 0
Pressure manag	gement :				50%	50%				100%
CAPEX	New pressure management installations	No	31	R 75 000	R 1 162 500	R 1 162 500	R 0	R 0	R 0	R 2 325 000
OPEX	Maintain pressure management installations	No	62	R 5 000	R 310 000	R 310 000	R 310 000	R 310 000	R 310 000	R 1 550 000
Control valve m	nanagement :				50%	50%				100%
CAPEX	New control valve installations	No		R 0	R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Maintain all control valve installations	No	563	R 5 000	R 2 815 000	R 2 815 000	R 2 815 000	R 2 815 000	R 2 815 000	R 14 075 000
Consumer meter	ering :				20%	20%	20%	20%	20%	100%
CAPEX	Replacement of old water meters	No	19 900	R 1 200	R 4 776 000	R 23 880 000				
OPEX	Replacement of broken and cycled water meters	No	9 950	R 1 200	R 11 940 000	R 59 700 000				
Top consumer a	audit :				20%	20%	20%	20%	20%	100%
CAPEX	Audit and retrofit non domestic consumers	No	9 950	R 10 000	R 19 900 000	R 19 900 000	R 19 900 000	R 19 900 000	R 19 900 000	R 99 500 000
OPEX	Maintain non domestic consumers installations	No	9 950	R 500	R 4 975 000	R 24 875 000				
GIS / CAD syste	em :		•		50%	50%				100%
CAPEX	Setup CAD/ GIS system	Sum	5	R 200 000	R 500 000	R 500 000	R 0	R 0	R 0	R 1 000 000
OPEX	Maintain CAD / GIS system	Sum	5	R 200 000	R 1 000 000	R 1 000 000	R 1 000 000	R 1 000 000	R 1 000 000	R 5 000 000
Management In	formation System :									100%

CAPEX	Setup basic MIS system to support WDM	Sum	5	R 200 000	R 500 000	R 500 000	R 0	R 0	R 0	R 1 000 000
OPEX	Maintain MIS system	Sum	5	R 100 000	R 500 000	R 500 000	R 500 000	R 500 000	R 500 000	R 2 500 000
Water loss me	onitoring and audits:			-	100%	-	-			100%
CAPEX	Perform proper analysis of distribution network	Sum	5	R 200 000	R 1 000 000	R 0	R 0	R 0	R 0	R 1 000 000
OPEX	Perform ad hoc analysis to monitor interventions	Sum	5	R 20 000	R 100 000	R 100 000	R 100 000	R 100 000	R 100 000	R 500 000
	Item	Туре			Year 1	Year 2	Year 3	Year 4	Year 5	Total
TOTAL COST	S									
Institutional		CAPEX			R 1 000 000	R 500 000	R 500 000	R 0	R 0	R 2 000 000
		OPEX			R 575 000	R 2 875 000				
		TOTAL			R 1 575 000	R 1 075 000	R 1 075 000	R 575 000	R 575 000	R 4 875 000
Financial		CAPEX			R 200 000	R 100 000	R 100 000	R 0	R 0	R 400 000
		OPEX			R 43 780 000	R 218 900 000				
		TOTAL			R 43 980 000	R 43 880 000	R 43 880 000	R 43 780 000	R 43 780 000	R 219 300 000
Social		CAPEX			R 7 864 000	R 7 864 000	R 7 364 000	R 7 364 000	R 7 364 000	R 37 820 000
		OPEX			R 13 734 000	R 68 670 000				
		TOTAL			R 21 598 000	R 21 598 000	R 21 098 000	R 21 098 000	R 21 098 000	R 106 490 000
Technical		CAPEX			R 53 333 700	R 52 748 700	R 47 486 200	R 46 971 200	R 46 971 200	R 247 511 000
		OPEX			R 30 512 600	R 152 563 000				
		TOTAL			R 83 846 300	R 83 261 300	R 77 998 800	R 77 483 800	R 77 483 800	R 400 074 000
Total		CAPEX			R 62 397 700	R 61 212 700	R 55 450 200	R 54 335 200	R 54 335 200	R 287 731 000
		OPEX			R 88 601 600	R 443 008 000				
		TOTAL			R 150 999 300	R 149 814 300	R 144 051 800	R 142 936 800	R 142 936 800	R 730 739 000
					R 150 999 300	R 149 814 300	R 144 051 800	R 142 936 800	R 142 936 800	
BENEFITS										
	Item	Unit	Quantity	Rate	Year 1	Year 2	Year 3	Year 4	Year 5	Total
CHANGE IN C	CONSUMPTION									
Reduced input	tvolume				20%	40%	60%	80%	100%	300%
Volume		m ³ /annum	1 496 000		299 200	598 400	897 600	1 196 800	1 496 000	4 488 000
Amount		R / annum	1 496 000	R 3.00	R 897 600	R 1 795 200	R 2 692 800	R 3 590 400	R 4 488 000	R 13 464 000
Increased reve	enue water				20%	40%	60%	80%	100%	300%
Volume		m ³ /annum	8 871 000		1 774 200	3 548 400	5 322 600	7 096 800	8 871 000	26 613 000
Amount		R / annum	8 871 000	R 4.00	R 7 096 800	R 14 193 600	R 21 290 400	R 28 387 200	R 35 484 000	R 106 452 000
				<u> </u>	<u> </u>			<u> </u>		
Total		R / annum			R 7 994 400	R 15 988 800	R 23 983 200	R 31 977 600	R 39 972 000	R 119 916 000

Payback period - years 6.1

WCWDM STRATEGY AND BUSINESS PLAN : BUDGET AND CASHFLOW

Municipality name Greater Giyani LM, Greater Letaba LM, Greater Tzaneen LM, Ba-Phalaborwa LM, Maruleng LM

COSTS										
	Item	Unit	Quantity / year	Rate	Year 1	Year 2	Year 3	Year 4	Year 5	Total
INSTITUTION	IAL / LEGISLATIVE INTERVENTIONS									
Institutional re	view:									0%
CAPEX	Review organogram and fill vacancies	Sum	5		R 1 000 000	R 0	R 0	R 0	R 0	R 1 000 000
OPEX		Sum	0		R 0	R 0	R 0	R 0	R 0	R 0
Training and e	education :				50%	50%				100%
CAPEX	Not applicable	No	0		R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Assume one training course / employee / annum	No	75		R 375 000					
Customer cha	arter, policy, bylaws :					50%	50%			100%
CAPEX	Review bylaws on 5 year cycles	Sum	5		R 200 000	R 0	R 800 000	R 0	R 0	R 1 000 000
OPEX	Enforce bylaws	Sum	5		R 500 000	R 2 500 000				
FINANCIAL INTERVENTIONS										
Effective meter	ering and billing :				50%	50%				100%
CAPEX	Perform meter audit	No	0		R 0	R 0	R 0	R 0	R 0	R 0
OPEX	Ensure proper metering and billing of all consumers	No	256 608		R 25 660 800	R 128 304 000				
Water tariffs :			·······		50%		50%			100%
CAPEX	Review water tariffs	Sum	5		R 500 000	R 0	R 500 000	R 0	R 0	R 1 000 000
OPEX	Not applicable	Sum	0		R 0	R 0	R 0	R 0	R 0	R 0
Informative bil	lling :				50%	50%				100%
CAPEX	Improve invoice to show monthly consumption	Sum	5		R 440 000	R 440 000	R 40 000	R 40 000	R 40 000	R 1 000 000
OPEX	Distribute information with bill	Sum	256 608		R 30 792 960	R 153 964 800				
			······							
SOCIAL INTE	RVENTIONS									
Consumer Av	wareness Campaign :				20%	20%	20%	20%	20%	100%
CAPEX	Install bill boards, design pamphlets, radio campaigns	Sum	266 708		R 6 400 992	R 32 004 960				
OPEX	Target households on monthly basis with awareness cam	No	266 708		R 16 002 480	R 80 012 400				
Consumer He	elp and Support Desk :				50%	50%				100%
CAPEX	Improve existing help-desk to provide one-stop service	Sum	5		R 1 050 000	R 250 000	R 0	R 0	R 0	R 1 300 000
OPEX	Maintain help-desk	Sum	5		R 600 000	R 3 000 000				
Schools awa	reness :				20%	20%	20%	20%	20%	100%
CAPEX	Prepare schools competition, awareness, retrofit	No	304		R 1 216 000	R 6 080 000				
OPEX	Monthly schools awareness campaign	No	304		R 797 000	R 3 985 000				

TECHNICAL IN	TERVENTIONS									
Bulk metering :				50%	50%				100%	
CAPEX	New meter installations required	No	10	R 250 000	R 250 000	R 0	R 0	R 0	R 500 000	
OPEX	Maintenance of existing bulk meters	No	40	R 40 000	R 200 000					
Sectorisation :	-		•	50%	50%				100%	
CAPEX	Setup of new DMA / PMAs	No	30	R 750 000	R 687 500	R 62 500	R 0	R 0	R 1 500 000	
OPEX	Maintenance of DMA / PMAs including step testing	No	30	R 750 000	R 3 750 000					
Active Leakage	Active Leakage Control :			50%	50%	•		•	100%	
CAPEX	Not applicable	No	0	R 0	R 0	R 0	R 0	R 0	R 0	
OPEX	Fix all visible and reported leaks	No	3 692	R 3 877 000	R 19 385 000					
Valve audits			•	20%	20%	20%	20%	20%	100%	
CAPEX	Locate, clean, repair, document network valves	No	14 768	R 11 814 400	R 59 072 000					
OPEX	Maintain network valves	No	4 138	R 4 137 600	R 20 688 000					
Leak and loggir	ng equipment :	·		50%	25%	25%		·	100%	
CAPEX	Procure basic WDM equipment	Sum	21	R 105 000	R 105 000	R 105 000	R 105 000	R 0	R 420 000	
OPEX	Not applicable	Sum	0	R 0	R 0	R 0	R 0	R 0	R 0	
Telemetry :		·			50%	50%		·	100%	
CAPEX	Install telemetry sites	No	5	R 37 500	R 37 500	R 0	R 0	R 0	R 75 000	
OPEX	Maintain telemetry sites	No	15	R 22 500	R 112 500					
Retrofitting and	removal of wasteful devices :	·		20%	20%	20%	20%	20%	100%	
CAPEX	Retrofit government buildings, schools, etc.	No	51 322	R 10 264 320	R 51 321 600					
OPEX	Not applicable	No	0	R 0	R 0	R 0	R 0	R 0	R 0	
Mains replacem	nent :	-		20%	20%	20%	20%	20%	100%	
CAPEX	Replace critical leaking mains	km	103	R 2 068 800	R 10 344 000					
OPEX	Not applicable	km	0	R 0	R 0	R 0	R 0	R 0	R 0	
Pressure manage	gement :			50%	50%				100%	
CAPEX	New pressure management installations	No	19	R 1 275 000	R 1 275 000	R 750 000	R 750 000	R 750 000	R 4 800 000	
OPEX	Maintain pressure management installations	No	19	R 95 000	R 475 000					
Control valve m	nanagement :			50%	50%				100%	
CAPEX	New control valve installations	No	0	R 0	R 0	R 0	R 0	R 0	R 0	
OPEX	Maintain all control valve installations	No	25	R 125 000	R 625 000					
Consumer meter	ering :			20%	20%	20%	20%	20%	100%	
CAPEX	Replacement of old water meters	No	25 661	R 6 158 592	R 30 792 960					
OPEX	Replacement of broken and cycled water meters	No	13 555	R 16 265 820	R 81 329 100					
Top consumer	audit :			20%	20%	20%	20%	20%	100%	
CAPEX	Audit and retrofit non domestic consumers	No	12 251	R 24 501 680	R 122 508 400					
OPEX	Maintain non domestic consumers installations	No	12 252	R 6 126 000	R 30 630 000					
GIS / CAD syste	em :			50%	50%				100%	
CAPEX	Setup CAD/ GIS system	Sum	5	R 600 000	R 600 000	R 200 000	R 200 000	R 200 000	R 1 800 000	
OPEX	Maintain CAD / GIS system	Sum	5	R 1 000 000	R 5 000 000					
Management In	formation System :								100%	
CAPEX	Setup basic MIS system to support WDM	Sum	5		R 500 000	R 500 000	R 100 000	R 100 000	R 100 000	R 1 300 000
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OPEX	Maintain MIS system	Sum	5		R 500 000	R 2 500 000				
Water loss m	onitoring and audits:	•			100%	-				100%
CAPEX	Perform proper analysis of distribution network	Sum	5		R 800 000	R 500 000	R 0	R 0	R 0	R 1 300 000
OPEX	Perform ad hoc analysis to monitor interventions	Sum	5		R 100 000	R 500 000				
	ltem	Туре			Year 1	Year 2	Year 3	Year 4	Year 5	Total
TOTAL COST	rs									
Institutional		CAPEX			R 1 200 000	R 0	R 800 000	R 0	R 0	R 2 000 000
		OPEX			R 875 000	R 4 375 000				
		TOTAL			R 2 075 000	R 875 000	R 1 675 000	R 875 000	R 875 000	R 6 375 000
Financial		CAPEX			R 940 000	R 440 000	R 540 000	R 40 000	R 40 000	R 2 000 000
		OPEX			R 56 453 760	R 282 268 800				
		TOTAL			R 57 393 760	R 56 893 760	R 56 993 760	R 56 493 760	R 56 493 760	R 284 268 800
Social		CAPEX			R 8 666 992	R 7 866 992	R 7 616 992	R 7 616 992	R 7 616 992	R 39 384 960
-		OPEX			R 17 399 480	R 86 997 400				
-		TOTAL			R 26 066 472	R 25 266 472	R 25 016 472	R 25 016 472	R 25 016 472	R 126 382 360
Technical		CAPEX			R 59 125 292	R 58 762 792	R 56 025 292	R 55 962 792	R 55 857 792	R 285 733 960
		OPEX			R 33 038 920	R 165 194 600				
		TOTAL			R 92 164 212	R 91 801 712	R 89 064 212	R 89 001 712	R 88 896 712	R 450 928 560
Total		CAPEX			R 69 932 284	R 67 069 784	R 64 982 284	R 63 619 784	R 63 514 784	R 329 118 920
		OPEX			R 107 767 160	R 537 335 800				
		TOTAL			R 177 699 444	R 174 836 944	R 172 749 444	R 171 386 944	R 171 281 944	R 867 954 720
					R 177 699 444	R 174 836 944	R 172 749 444	R 171 386 944	R 171 281 944	
BENEFITS		-								
	ltem	Unit	Quantity	Rate	Year 1	Year 2	Year 3	Year 4	Year 5	Total
CHANGE IN (CONSUMPTION									
Reduced input	t volume				20%	40%	60%	80%	100%	300%
Volume		m ³ /annum	1 496 000		299 200	598 400	897 600	1 196 800	1 496 000	4 488 000
Amount		R / annum	1 496 000	R 3.00	R 897 600	R 1 795 200	R 2 692 800	R 3 590 400	R 4 488 000	R 13 464 000
Increased reve	enue water				20%	40%	60%	80%	100%	300%
Volume		m ³ /annum	8 871 000		1 774 200	3 548 400	5 322 600	7 096 800	8 871 000	26 613 000
Amount		R / annum	8 871 000	R 4.00	R 7 096 800	R 14 193 600	R 21 290 400	R 28 387 200	R 35 484 000	R 106 452 000
			, , , , , , , , , , , , , , , , , , , ,							
Total		R / annum			R 7 994 400	R 15 988 800	R 23 983 200	R 31 977 600	R 39 972 000	R 119 916 000

Payback period - years 7.2

WC/WDM Projection summary and targets

Municipality name Greater Giyani LM, Greater Letaba LM, Greater Tzaneen LM, Ba-Phalaborwa LM, Maruleng LM

Water Demand projection	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 1.0% WDM Scenario							84.98	85.68	86.40	87.11	87.84	88.57
Less 3.0% WDM Scenario							84.69	85.11	85.53	85.95	86.36	86.78
Less 5.0% WDM Scenario							84.41	84.54	84.66	84.78	84.89	84.99
Actual Demand	77.58	75.09	80.96	81.75	82.53	84.34	85.12					
High population No WDM							85.12	85.97	86.83	87.70	88.58	89.46
Current yield	114.51	114.51	114.51	114.51	114.51	114.51	114.51	114.51	114.51	114.51	114.51	114.51

Savings	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 1.0% WDM Scenario							0.14	0.29	0.43	0.58	0.74	0.89
Less 3.0% WDM Scenario							0.43	0.86	1.30	1.75	2.21	2.68
Less 5.0% WDM Scenario							0.71	1.43	2.17	2.92	3.69	4.47
Actual savings							0.00					

% Reduction	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 1.0% WDM Scenario							0.17%	0.33%	0.50%	0.67%	0.83%	1.00%
Less 3.0% WDM Scenario							0.50%	1.00%	1.50%	2.00%	2.50%	3.00%
Less 5.0% WDM Scenario							0.83%	1.67%	2.50%	3.33%	4.17%	5.00%

Year / Year % Growth	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Less 1.0% WDM Scenario								0.8%	0.8%	0.8%	1.7%	1.7%
Less 3.0% WDM Scenario								0.5%	0.5%	0.5%	1.0%	1.0%
Less 5.0% WDM Scenario								0.2%	0.1%	0.1%	0.3%	0.3%
Actual Demand		-3.2%	7.8%	1.0%	1.0%	2.2%	0.9%					
High population No WDM								1.0%	1.0%	1.0%	1.0%	1.0%

Key Performance Indicators	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Population (DWA, NIS)	1 115 627	1 123 018	1 129 751	1 138 225	1 145 059	1 062 148	1 072 769					
Households (DWA, NIS)	263 749	265 497	267 088	269 096	270 703	251 195	253 707					
l/c/d	191	183	196	197	197	218	217					
m3/hh/month	25	24	25	25	25	28	28					
Demand MI/day	213	206	222	224	226	231	233					



Strategy & Business Plan_Mopani/Projections WRP Consulting Engineers Pty Ltd



WCWDM STRATEGY : RPMS Compliance

Municipality name Greater Giyani LM, Greater Letaba LM, Greater Tzaneen LM, Ba-Phalaborwa LM, Maruleng LM

Key questions from the Regulatory Performance Measurement System (RPMS) related to WC/WDM

KPI		ID	WSA Value
KPI 1 – .	Access to Water		
KPI 2 – .	Access to Sanitation		
KPI 3 – .	Access to Free Basic Water		
	Total poor households receiving Free Basic Water for last financial year	ID:012	
	Total poor households	ID:013	
KPI 4 – /	Access to Free Basic Sanitation		
	Total poor households receiving Free Basic Sanitation for last financial year	ID:014	
	Total poor households	ID:013	
KPI 5 –	Drinking Water Quality		
KPI 6 –V	/astewater Quality		
KPI 7 - (Customer Services Standards		
Compor	ent 1 – Service Interruptions		
	Total number of Service interruptions in the last financial year	ID:034	
	Number of interruptions in continuous service to consumers, where interruption for a single incident was greater than 24h	ID:033	
Compor	ent 2 – CRM Systems		
	Does the WSA have a customer Charter	ID:036	
	Does the WSA have a customer service centre	ID:035	
	Is there a system to manage customer queries and log faults	ID:038	
	Does the incident tracking system escalate complaints if not responded to within a prescribed time?	ID:037	
KPI 8 - I	istitutional Effectiveness		
Compor	ent 1 - Institutional Effectiveness		
	Completed WSDP is approved by Council for the last financial year?	ID:039	
	Required policies are in place and approved by Council?	ID:040	
	Required bylaws are in place and approved by Council?	ID:041	
	Contracts and Service level agreements in place with all appropriate service delivery role-players (WSPs, internal etc.)	ID:042	
	The WSA monitors the KPIs defined by the contract or SLA?	ID:043	
Compor	ent 2 - Water Services Staff Effectiveness		
	Total Water Services staff costs for the last financial year	ID:045	
	Total cost of water and sanitation provision for the last financial year including interest and depreciation (expenditure)	ID:046	
	Total budgeted for water services staff according to the approved organogram for the last financial year	ID:078	
Compor	ent 3 - Grant Funding Effectiveness		
	Total grant funding allocation received for the last financial year	ID:048	
	Total grant funding allocation spent for the last financial year	ID:047	
Compor	ent 4 - WSA Annual Report		
	WSA annual report submitted to Minister	ID:077	
Compor	ent 5 - % Filled Posts on Organogram		
	Total number of posts on Council-approved organogram for the last financial year for water services staff	ID:080	
	Total number of posts filled on the approved water services organogram in the last financial year	ID:079	

KPI 9 - Financial Performance		
Component 1 – Financial Integrity		
Is WSA ring-fenced? (Separate legal entity=3, Separate accounting entity=2, Partially ring-fenced=1, Not ring-fenced at all=0)	ID:049	
Audit report evaluation. (Unqualified=4, Qualified=3, Adverse=2, Disclaimer=1, No report=0)	ID:050	
Component 2 – Average Debtor Days		
Water Services sales income for the last financial year (water/sanitation)	ID:052	
Total outstanding customer/consumer debt for water and sanitation for the last financial year	ID:051	
Component 3 – Revenue Collection Effectiveness		
Water Services sales income for the last financial year (water/sanitation)	ID:052	
Water Services billed income actually received from consumers for last financial year	ID:053	
Component 4 – Average Creditor Days		
Total bulk water purchases for the last financial year	ID:055	
Total bulk water accounts outstanding for the last financial year	ID:054	
Component 5 – Financial Sustainability		
Total water and sanitation income for the last financial year	ID:056	
Total cost of water and sanitation provision for the last financial year including interest and depreciation (expenditure)	ID:046	
Component 6 – Financial Effectiveness		
Total outstanding customer/consumer debt (after provisions) for water and sanitation for the last financial year	ID:051	
Total provision for doubtful debt for water and sanitation for the last financial year	ID:082	
KPI 10 Strategic Asset Management		
Component 1 - Capital Spent on Rehabilitation and Replacement		
Total capital budget (Water and Sanitation) in the last financial year	ID:063	
Total capital spent on refurbishment and replacement in the last financial year	ID:062	
Component 2 - Asset Management Effectiveness		
Asset management plan status	ID:057	
Asset register status	ID:058	
Asset management system is electronic	ID:059	
Component 3 – O&M Expenditure		
Total spent on O&M/Annual maintenance cost (Water and Sanitation) in the last financial year	ID:060	
Replacement value of assets (water services infrastructure)	ID:061	
Component 4 – Replacement Saving		
Depreciation value for the last financial year (Water and Sanitation infrastructure)	ID:065	
Contribution to asset replacement fund for the last financial year. (Water and Sanitation)	ID:064	
Component 5 – Asset Register Monitoring		
Asset register field monitored: Date acquired	ID:066	
Asset register field monitored: Estimated remaining life of asset	ID:068	
Asset register field monitored: Replacement value of asset	ID:070	
Asset register field monitored: Purchase cost of asset	ID:069	
Asset register field monitored: Description of asset (Yes/No)	ID:067	
KPI 11 Water Demand Management		
System input volume (external sources) for the last financial year	ID:121	
System input volume (own sources) for the last financial year	ID:122	
Total billed metered water consumption (volume) for the last financial year	ID:071	
Total billed unmetered water consumption (volume) for the last financial year	ID:074	
Total unbilled metered water consumption (volume) for the last financial year	ID: 073	
Total unbilled unmetered water consumption (volume) for the last financial year	ID: 123	
ADDITIONAL QUESTIONS FOR WATER USE EFFICIENCY		

Weter Concernition and Weter Demond Management along	1	1
Installation of water efficient devices		
Repair of leaks		
Measurement or control of water supplied		
Pressure management		
Additional KPI : Tariff Data		
Which of the listed elements are taken into account when you determine your tariff? Indicate from the list provided	ID: 201	
Total amount of subsidies allocated to water for the next financial year	ID: 202	
Total projected cost of water provision for the next financial year	ID: 203	
Does your tariff recognise the difference between levels of service (according to Regulation 4 under s10 of the Water Services Act)?	ID: 204	
Does your tariff recognise the difference between socio-economic status of customers (according to s10 of the Water Services Act)?	ID: 205	
Do you charge a rising block tariff?	ID: 206	
How many blocks are in your tariff structure?	ID: 207	
What is your approved standard tariff? (Basic levy)	ID: 208	
What are the actual 2010/2011 tariffs for the following consumer categories?	ID: 209	
Do you reflect your tariff structure on your bill?	ID: 210	
What are the quantities of water supplied to the following consumer categories (annually)?	ID: 211	
What is the unit number of consumers served with water in each consumer category?	ID: 212	
Do you have a seasonal tariff in your WSA?	ID: 213	
Does your tariff include a fixed charge?	ID: 214	
If a fixed charge is levied, do you subsidise the FBW?	ID: 215	
What other sources of water services revenue (other than tariffs) does your WSA have? Indicate sources on the list provided	ID: 216	
Total annual water services surplus / deficit	ID: 217	