



UMGUNGUNDLOVU
UMASIPALA WESIFUNDA
DISTRICT MUNICIPALITY
DISTRIK MUNISIPALITEIT

WATER CONSERVATION AND DEMAND MANAGEMENT

KZN R_SSC MEETING



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INTRODUCTION

- BVI Consulting Engineers (BVI) were appointed by Development Bank of South Africa (DBSA) in July 2016 to undertake a NRW Master Plan for uMgungundlovu District Municipality (UMDM)
- BVI sub-consulted the work to JOAT Consulting (JOAT)
- Information collection and stakeholder engagement began in July 2016
- Master Plan was to be completed by end Nov 2016

SYSTEM CHARACTERISTICS

Local Municipality	Length of Mains - Trunk and Reticulation (km)	Registered Water Connections	Total No of Cadastral	Total no of Standpipes (GIS data and other sources)	Total Households - Census 2016	Average Zone Operating Pressure (Estimate)
uMshwathi LM	824,6	7838	20316	455	29082	50
uMgeni LM	370,0	11913	17590	0	37352	50
Mooi Mpofana LM	117,3	776	6505	0	11648	50
Impendle LM	274,5	1247	9483	341	7873	50
Mkambathini LM	423,7	3459	11609	1	17177	50
Richmond LM	370,6	1400	14590	456	17624	50
UMDM	2381	26633	80093	1253	120756	50

SYSTEM INPUT VOLUMES

Water Balance LM Names	System Input Volumes			
	<i>Ml/day</i>	<i>Ml/year</i>	<i>kl/day</i>	<i>CF (%)</i>
uMshwathi LM	12,32	4498	12322	12
uMgeni LM	22,10	8066	22099	15
Mooi Mpofana LM	5,44	1986	5441	15
Impendle LM	2,81	1027	2814	20
Mkambathini LM	5,45	1988	5446	10
Richmond LM	5,96	2177	5965	10
UMDM	54,09	19742	54088	15

KEY PERFORMANCE INDICATORS

The below financial indicators are based on the combined individual unit cost of water per system, the annual costs of the water balance components for the entire District for the 2015/16 financial year. The combined current key performance indicators are summarised as follows:

Key Performance Indicator	Area	Unit	KPI Value
Water Resources	Inefficiency of use water resources	System Input Volume	37.4%
Operational	Current Annual Real Losses	Litre/connection/day	782.4
	Unavoidable Annual Real Losses	Litre/connection/year	113.2
	Apparent Losses	Litre/connection/day	78
	Infrastructure Leakage Index (ILI)	Index	6.9
Financial	Non-Revenue Water	Volume %	63.1

WATER BALANCE

System Input Volume 19 742 Ml/year ± 15,0%	Authorised Consumption 10 164 Ml/year 10,1%	Billed Authorised Consumption 7 286 Ml/y ear ± 11,0%	Billed Metered Consumption 6 681 Ml/y ear ± 12,0%	Revenue Water 7 286 Ml/y ear ± 11,0%
			Billed Unmetered Consumption 605 Ml/y ear 10,0%	
	Water Losses 9 578 Ml/year ± 29,0%	Unbilled Authorised Consumption 2 878 Ml/y ear ± 22,0%	Unbilled Metered 364 Ml/y ear ± 20,0%	Non-Revenue Water 12 456 Ml/y ear ± 22,9%
			Unbilled Unmetered 2 514 Ml/y ear ± 25,0%	
		Apparent Losses 1 724 Ml/y ear ± 154,6%	Illegal Consumption 1 564 Ml/y ear 170,4%	
			Metering Inaccuracies 160 Ml/y ear ± 15,0%	
		Real Losses 7 854 Ml/y ear ± 10,0%	Mains and Distribution Leaks	
			Reservoir Overflows	
			Service Connection Leaks	

NRW = 63,1%

ILI = 6,7

That means your system is 6,7 times more worse than it should be!

Real Losses = 808 l/conn/day – A good system is approx. 250l/conn/day

ANNUAL COST TO UMDM

Water Balance Component	Annual Volumes (kl)	Annual Cost to UMDM at R4.95/kl
System Input Volume	19 741 987	R97 722 836
Unbilled Authourised Consumption	2 878 411	R14 248 133
Unbilled Metered	364 324	R1 803 405
Unbilled Unmetered	2 514 087	R12 444 728
Apparent Losses	1 723 877	R8 533 190
Unauthourised Consumption	1 563 953	R7 741 568
Metering Inaccuracies	159 924	R791 622
Real Losses	7 853 216	R38 873 419
Non-Revenue Water	12 455 503	R61 654 742

NRW REDUCTION PLAN SUMMARY

Current Situation (% are of SIV)		Initiatives	Estimated Costs	Length of Time	Possible Funding Sources	Municipal Key Stakeholder	Proposed Situation in 5 years (% are of SIV)	
NRW Element	WB Component						NRW Element	WB Component
Billed <u>Authorised</u> Consumption (7,286MI), (37%), (R36.1million)	Billed Metered Consumption (6,681MI), (34%), (R33.1million)	Top Consumer Investigation and meter change out	R2.2million	36 <u>mths</u>	Commercial Sources	Finance Unit	Billed <u>Authorised</u> Consumption (10,704MI), (58%), (R53.0million)	Billed Metered Consumption (10,704MI), (58%), (R53.0million)
		Meter replacement program	R10.7million	60 <u>mths</u>	Grant Funding	Finance Unit		
	Billed Unmetered Consumption (605MI), (3%), (R3million)	Standpipe audit and metering	R4.4million	48 <u>mths</u>	Grant Funding	Finance and Operations Units		Billed Unmetered Consumption (0MI), (0%), (R0million)
Unbilled <u>Authorised</u> Consumption (2,878MI), (15%), (R14.2million)	Unbilled Metered Consumption (364MI), (2%), (R1.8million)	Billing database/GIS reference and checks	R0.35million	60 <u>mths</u>	Grant Funding	Finance and GIS Units	Unbilled <u>Authorised</u> Consumption (1,354MI), (7%), (R6.7million)	Unbilled Metered Consumption (186MI), (1%), (R0.9million)
	Unbilled Unmetered Consumption (2,514MI), (13%), (R12.4million)	New connection installation	R67.6million	60 <u>mths</u>	Commercial Sources	Finance and GIS Units		Unbilled Unmetered Consumption (1,168MI), (6%), (R5.8million)
Apparent Losses (1,724MI), (9%), (R8.5million)	Illegal Consumption (1,564MI), (8%), (R7.7million)	Billing database/GIS reference and checks	R0.35million	60 <u>mths</u>	Grant Funding	Finance and GIS Units	Apparent Losses (1,076MI),	Illegal Consumption (808MI), (4%), (R4million)
		Development of Apparent Loss Policies	R0.3million	36 <u>mths</u>	Grant Funding	Finance Unit		

NRW REDUCTION PLAN CONTI..

Current Situation (% are of SIV)		Initiatives	Estimated Costs	Length of Time	Possible Funding Sources	Municipal Key Stakeholder	Proposed Situation in 5 years (% are of SIV)	
NRW Element	WB Component						NRW Element	WB Component
	Metering Inaccuracies (160MI), (1%), (R0.8million)	Meter reading accuracy assessment	R0.05million	12 <u>mths</u>	Commercial Sources	Finance Unit	(6%), (R5.3million)	Metering Inaccuracies (268MI), (2%), (R1.3million)
		Meter accuracy testing	R0.05million	12 <u>mths</u>	Commercial Sources	Finance Unit		
Real Losses (7,854MI), (40%), (R38.9million)	Mains, distribution, services connection leaks and reservoir overflows (7,854MI), (40%), (R38.9million)	Development of Real Loss policies	R0.05million	12 <u>mths</u>	Grant Funding	Operations Unit	Real Losses (5,463MI), (29%), (R27million)	Mains, distribution, services connection leaks and reservoir overflows (5,463MI), (29%), (R27million)
		Development of Operations and Maintenance Plan	R0.9million	36 <u>mths</u>	Grant Funding	Operations Unit		
		Installation of Custody Transfer check Meters	R3.9million	36 <u>mths</u>	Commercial Sources	Finance and Operations Unit		
		Reservoir inspection and repair	R4.6million	48 <u>mths</u>	Grant Funding	Operations Unit		
		Reservoir inlet control valve inspection and repair	R5.2million	36 <u>mths</u>	Grant Funding	Operations Unit		
		Leak detection surveys and repairs	R21.1million	60 <u>mths</u>	Grant Funding	Operations Unit		
		Recommissioning PRVs and controllers	R5.2million	36 <u>mths</u>	Grant Funding	Operations Unit		
		Design, installation and commissioning of new PRVs	R13.9million	60 <u>mths</u>	Grant Funding	Operations Unit		
		Control valve maintenance program	R0.3million	60 <u>mths</u>	Grant Funding	Operations Unit		

NRW REDUCTION PLAN BUDGET

Financial Year	Global Interventions	Real Loss Interventions	Billing Improvements	Totals
2016/17	R 7 036 000	R18 936 600	R16 905 127	R42 877 727
2017/18	R12 383 520	R16 495 296	R17 813 435	R46 692 251
2018/19	R12 850 126	R15 226 578	R18 882 241	R46 958 945
2019/20	R12 768 366	R10 268 464	R20 753 606	R43 790 435
2020/21	R 9 763 997	R 6 510 089	R18 640 633	R34 914 719
Totals	R54 802 009	R67 437 026	R92 995 043	R215 234 077

CONCLUSION AND RECOMMENDATIONS

- UMDM NRW currently at 63,1%
- Due to normal rate of rise and system deterioration NRW will increase to 70,7% in 5 yrs
- With combined Opex and Capex investment of R215million NRW can be reduced to 42,4% within 5 years
- EXCO approval of the NRW Master Plan is scheduled for Feb 2017
- Thereafter a BP will be submitted to DWS's SAC committee to seek funding

END – THANK YOU

