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

Water Conservation and Demand Management Task

Study Steering Committee meeting
31 October 2012

water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

Contents

- Objectives
- Methodology
- Status quo
- Strategy and business plan development
- Summary and conclusions

OBJECTIVES AND METHODOLOGY

Objectives

- To make more effective and efficient use of the existing and available water resources by all water use sectors in the study area;
- To develop realistic water saving targets for the respective water use sectors and quantify the impact on current and future water requirements in the study area;
- To enable the Catchment Management Agency (CMA) and the Department of Water Affairs (DWA) to "free-up" additional water, which can be put to beneficial use in the public interest;

Objectives…

- To conserve water and avoid or delay the implementation of further expensive schemes for transfers and storage which may not be necessary if water is used efficiently; and
- To provide necessary information to support the implementation of compulsory licensing and related water allocation reforms.

Methodology

- Continuous Plan–Do–Check–Act process
- Requires management information
- Water balance diagram and KPIs
- Quantitative scorecard
- Qualitative scorecard
- Strategy development and business plan
- Assess impact on water resource balance diagram

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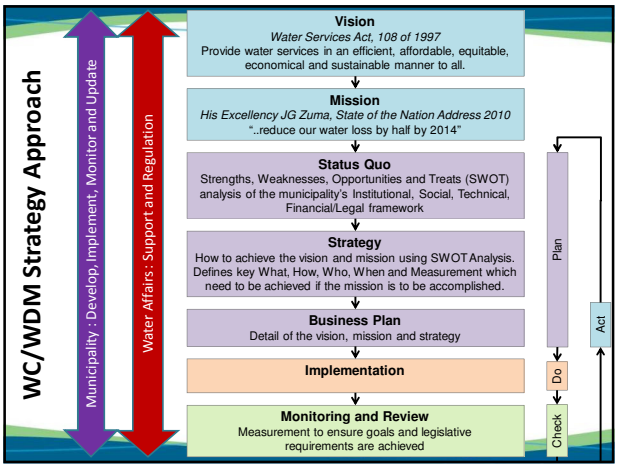


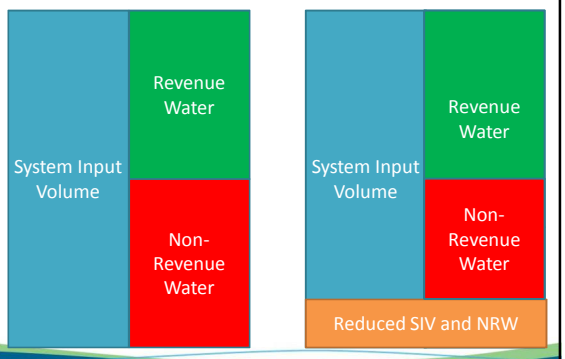
Main Sources of Information

- Water Services Development Plan
- Water Infrastructure Status and Intervention Plan
- Integrated Development Plan
- Water Affairs Data Sources (NIS, RPMS, FBW, etc)
- Blue / Green Drop
- National NRW assessment
- All town studies
- Existing WCWDM strategies and business plans
- Discussions with municipalities

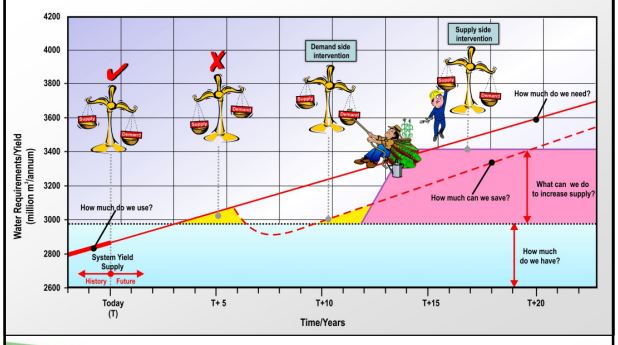
STANDARD IWA WATER BALANCE

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

Potential savings



Water Resource Balance Diagram



SWOT Analysis

Parameter	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.

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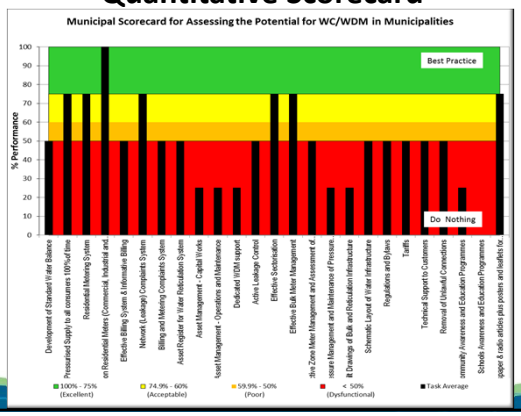
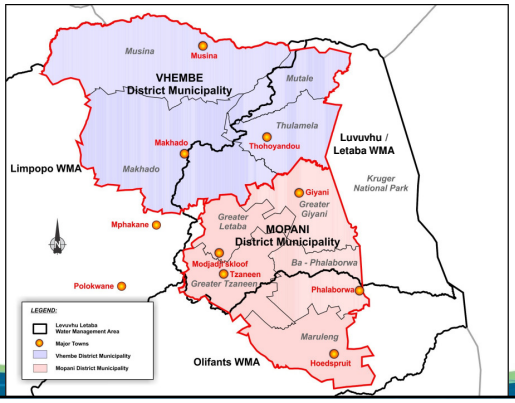
Quantitative Scorecard



Study Area

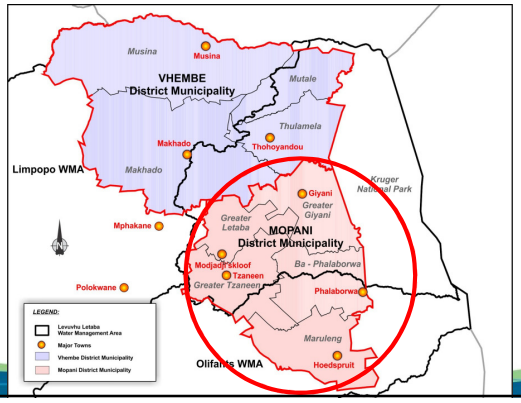


Progress to date

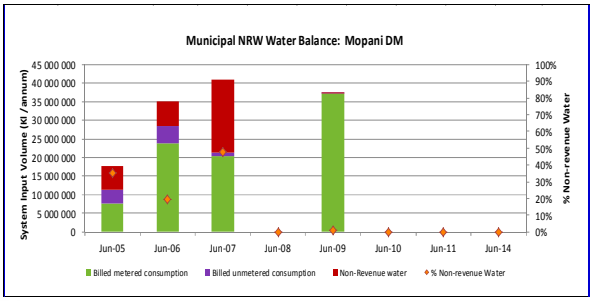
- Individual meetings held with all local and district municipalities
- Various follow-up discussions to confirm and obtain data
- Draft strategies compiled and distributed for comments
- Discussion of draft strategies with district and local municipalities in progress

STATUS QUO

Mopani DM Assessment



Mopani Ministerial NRW Assessment



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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

Mopani DM - KPIs

Municipality	Population			System Input Volume (Ml/day)		l/c/d		
Source	LLRS	WISIP DWA 2011	Blue Drop 2012	WISIP WTW Capacity 19 works	Blue Drop WTW Capacity 12 works	WISIP	Blue Drop	Adopted Value
Greater Tzaneen	392 426	411 690	220 417	133.70	47.90	325	116	325
Greater Letaba	268 398	271 738	18 000	15.70	17.50	58	64	58
Greater Giyani	275 809	300 015	251 000	55.00	69.40	183	231	183
Ba-Phalaborwa	No info	155 599	61 724	67.00	150.00	431	964	431
Maruleng *	No info	108 449	No info	6.50	No info	60	-	112
Mopani DM Total	**949 353**	**1 247 491**	**551 141**	**277.90**	**284.80**	**223**	**228**	**223**

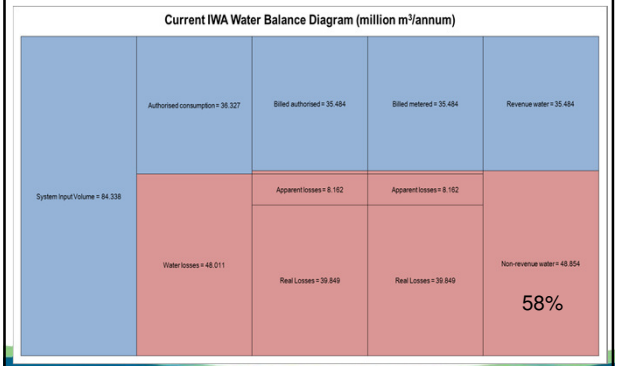
* Average consumption based on municipal report

Mopani Blue Drop Results

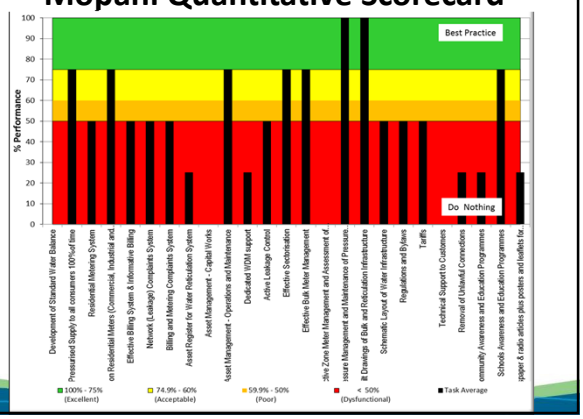
Water Services Authority	Mopani District Municipality
Water Services Provider(s)	Mopani DM; Lepelle Northern Water [a]; Nkowankowa LM [b]; Tzaneen LM [c]; Ba-Phalaborwa LM [d]; Letaba LM [e]
Municipal Blue Drop Score:	79.21%

Performance Area	Systems	Nkowankowa a;b;a	Phalaborwa / Lulekani / Namakgale a;d	Letaba Politisi / Modjadji a;e	Haenertsburg a;c
Blue Drop Score (2012)		**93.07% (↑)**	**92.63% (↑)**	**92.88% (↑)**	**79.87% (→)**
2011 Blue Drop Score		69.62%	80.47%	61.97%	Not assessed
2010 Blue Drop Score		82.50%	86.00%	84.25%	Not assessed
System Design Capacity (Ml/d)		24	No information	17.5	No information
Operational Capacity (% ito Design)		91.67	No information	76.00	No information
Population Served		80 000	61 724	18 000	584
Average daily Consumption (l/p/d)		275.00	486.03	738.89	513.70
Microbiological Compliance (%)		98.4%	99.7%	>99.9%	96.9%
Chemical Compliance (%)		98.6%	97.3%	97.0%	92.9%

Mopani DM - Current water balance



Mopani Quantitative Scorecard



Mopani Qualitative Scorecard

	Helpful	Harmful
Internal factors personnel, finance, capabilities	**Strengths** • Formal towns reasonably well operated and maintained • Management reports generated on monthly basis in some municipalities • Bulk metering in most areas.	**Weaknesses** • High vacancies rate on O&M and limited capacity building. • Limited materials and support structures. • Very old network • Limited or no as built drawings • Limited management information
External factors Legislation, Public, Politics	**Opportunities** • Effective billing system • Councillor training programme • Good political support • Positive relationship with consumers • Water tariffs not cost reflective and must be reviewed • Review policies, charters and bylaws to promote WC/WDM • Community awareness and education.	**Threats** • Inadequate training and capacity building • Illegal connections in the rural areas • No customer care section. • High level of leakages in private properties • RWS schemes

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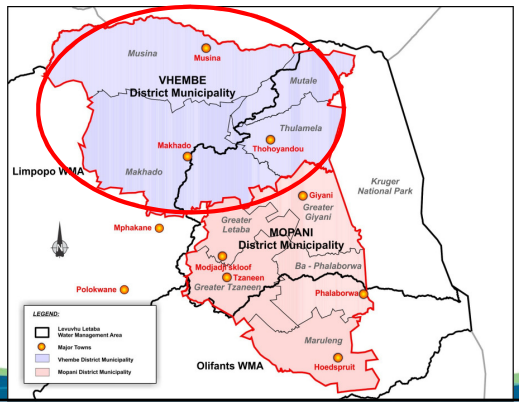
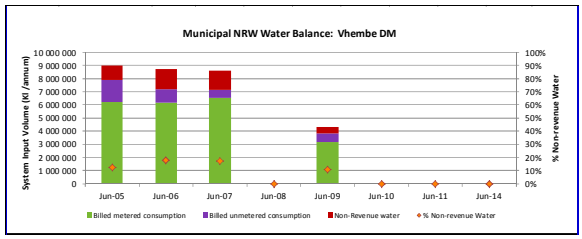
Vhembe DM Assessment



Vhembe Ministerial NRW Assessment



Vhembe 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

Vhembe DM - KPIs

Municipality	Population				System Input Volume (Ml/day)		l/c/d		
Source	LLRS	WISIP DWA 2011	WSIRF DWA 2012	Blue Drop 2012	WISIP WTW Capacity 37 works	Blue Drop WTW Capacity 12 works	WISIP	Blue Drop	Adopted Value
Thulamela	616 711	714 803	714 803	302 000	112.51	23.00	157	32	157
Musina	No info	51 892	51 892	50 000	0.50	26.00	10	501	501
Makhado	416 054	592 682	590 364	426 900	34.74	26.86	59	46	59
Mutale *	94 639	113 238	113 238	85 000	5.26	16.08	46	142	279
Vhembe DM Total	1 129 128	1 472 615	1 470 297	863 900	153.01	91.94	104	63	104

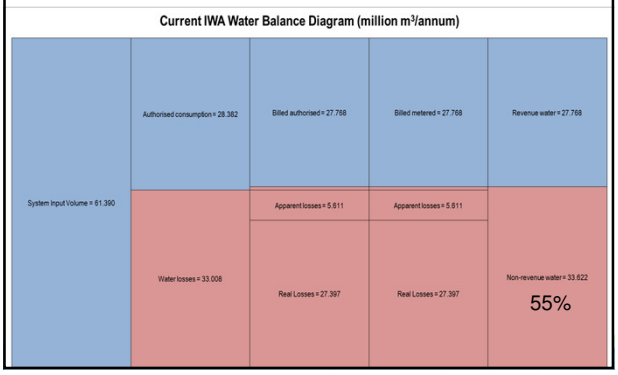
* Average consumption based on municipal report

Vhembe Blue Drop Results

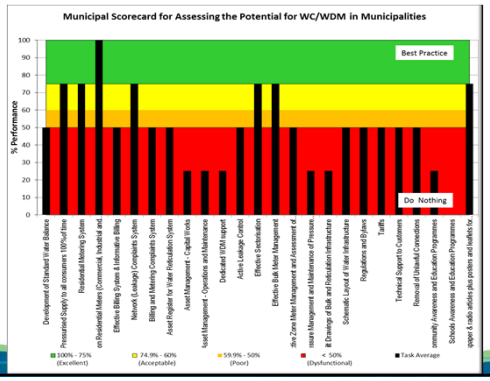
Water Services Authority	Vhembe District Municipality
Water Services Provider(s)	Vhembe DM; Musina LM*; Thulamela LM*; Mutale LM*; Makhado LM*; Naledi LM*
Municipal Blue Drop Score	74.85%

Performance Area	Systems	Musina[a]	Thohoyandou[b]	Malamulele[b]	Mutale[c]
Blue Drop Score (2012)		76.95% (↑)	71.21% (↑)	78.39% (↑)	77.17% (↑)
2011 Blue Drop Score		32.00%	51.65%	36.93%	50.10%
2010 Blue Drop Score		44.00%	58.13%	44.13%	41.25%
System Design Capacity (Ml/d)		26	7	16	13.04
Operational Capacity (% ito Design)		53.85	57.14	91.25	46.40
Population Served		50 000	102 000	200 000	80 000
Average daily Consumption (l/p/d)		280.00	6.86	8.00	16.30
Microbiological Compliance (%)		96.6%	96.8%	99.3%	>99.9
Chemical Compliance (%)		>99.9	>99.9	>99.9	>99.9

Vhembe DM – Current Water Balance



Vhembe Quantitative Scorecard



Vhembe Qualitative Scorecard

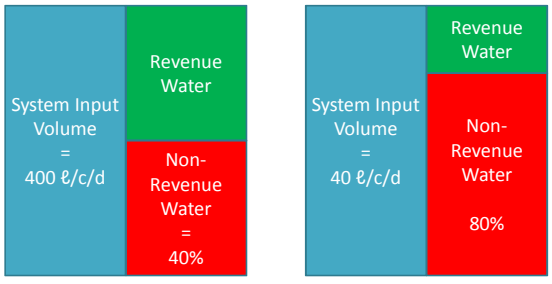
	Helpful	Harmful
Internal factors (personnel, finance, capabilities)	• Strengths • Formal towns reasonably well operated and maintained • Bulk metering and consumer metering • Credit control • Enforcement of policies and bylaws in some areas • Asset register in place.	• Weaknesses • High vacancies >70% in some areas • Informal supply areas and infrastructure • Intermittent supply, especially in rural supply schemes • Poor / no metering and billing • Limited or no management information • Limited or no logistical support • Limited technical skills and capacity
External factors (Legislation, Public, Politics	• Opportunities • Job creation • Water tariffs not cost reflective and must be reviewed • Community awareness and education • Fix all leaks irrespective of status • Political support but lacks understanding of water business and direction	• Threats • Institutional arrangements • Largely rural municipalities with poor level of service • Lack of human recourses • Lack of logistical support • Lack of funding – municipalities are grant dependant

STRATEGY

Overall objectives

- Comply with regulations
  - KPI 7: Customer service quality
  - KPI 8: Institutional effectiveness
  - KPI 9: Financial performance
  - KPI 10: Strategic asset management
  - KPI 11: Water use efficiency
- Improve management information
- Fix visible leakage and reduce wastage
- Promote WCWDM among politicians, municipality and the community
- Prioritise and allocate budgets
- Develop capacity to implement and sustain WC/WDM

Efficiency versus Non-revenue water



High non-revenue water and not efficient water use

Not Acceptable

High non-revenue water but very efficient water use

Acceptable

Conventional Demand Control

Parameter	Status
Supply area	Formal – high LOS, house connections, continuous supply
Connections	Metered
Meter reading	Monthly – manageable distances, continuous supply = accurate readings
Bylaws	Enforceable
Tariffs	Usually considered affordable = cost reflective
Billing	Easy to communicate & pay – post, e-mail, sms. Billing system easier to sustain
Demand control	Pays for service = Consumer awareness
Technology	Usually not restricted by costs, communications, skills,
Solution and benefits	Control demand through accurate metering and billing – Cost reflective

Alternative Demand Control

Parameter	Status
Supply area	Informal – low LOS, yard connections, intermittent supply
Connections	Un / metered, informal
Meter reading	Monthly – long distances, intermittent supply = inaccurate readings
Bylaws	Difficult to enforce
Tariffs	Unusually considered unaffordable = not cost reflective
Billing	Difficult to communicate & pay – no post, e-mail. Billing system difficult to sustain
Demand control	Limited / no payment = Consumer apathy
Technology	Restricted by costs, communications, skills,
Solution and benefits	Control demand through education, awareness and onsite leak repairs. Create jobs and sustainable

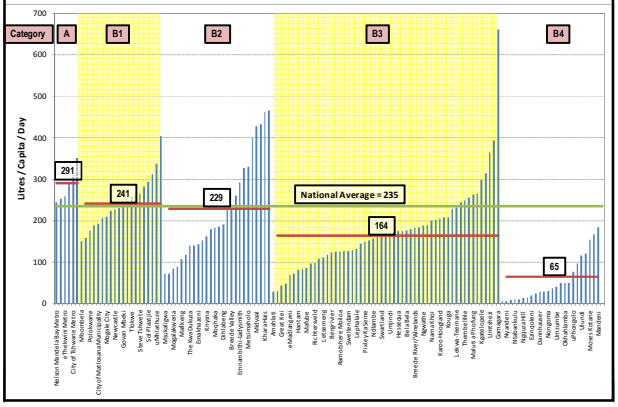
Institutional / Financial / Social Intervention Strategy

Intervention	No / limited WC/WDM Programme	Basic WC/WDM Programme	Advanced WC/WDM Programme
HR : Fill vacancies	X	X	X
HR : Training and capacity building			X
Policies / bylaws with Enforcement	X	X	X
Review water tariffs	X	X	X
Informative billing			X
Effective metering and billing : Domestic		X	X
Effective metering and billing : Non-domestic	X	X	X
Awareness : Internal	X	X	X
Awareness : Schools and Public Organisations	X	X	X
Awareness : Community	X	X	X
Customer care centre	X	X	X

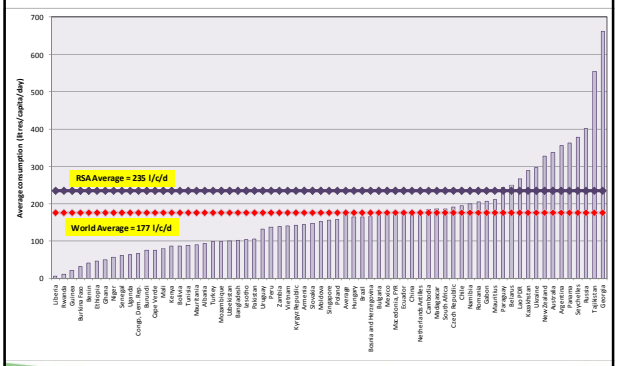
Technical Intervention Strategy

Intervention	No / limited WC/WDM Programme	Basic WC/WDM Programme	Advanced WC/WDM Programme
Bulk metering : Input volume	X	X	X
Bulk metering : Zones and districts		X	X
Sectorisation : Districts		X	X
Sectorisation : Zones			X
ALC : Reticulation network	X	X	X
ACL : Private properties	X	X	X
Consumer metering : Non-domestic		X	X
Consumer metering : Domestic			X
Analysis : Water balance	X	X	X
Analysis : Night flow analysis			X
Pressure management		X	X
Asset management : Valve audits & reticulation			X
Asset management : Control valves		X	X
Asset management : Selective main replacement		X	X

Municipal l/c/d Distribution /Category



International l/c/d benchmark



Source : The International Benchmarking Network for Water and Sanitation Utilities (IBNET)

Impact of WC/WDM

- Scope for reducing total demand and reducing NRW in urban areas
  - Formal supply areas
  - Metering and billing systems are possible
- Limited scope for reducing total demand and NRW in rural areas
  - Informal supply areas
  - Currently operate on intermittent supply and any saving will be redistributed
  - Difficult to implement metering and billing but can reduce inefficiencies and wastage

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Mopani Budget Requirements

	Type	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 575 000	R 575 000	R 575 000	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 43 780 000	R 43 780 000	R 43 780 000	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 13 734 000	R 13 734 000	R 13 734 000	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 30 512 600	R 30 512 600	R 30 512 600	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 88 601 600	R 88 601 600	R 88 601 600	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**

Vhembe Budget Requirements

	Type	Year 1	Year 2	Year 3	Year 4	Year 5	Total
TOTAL COSTS							
Institutional	CAPEX	R 800 000	R 0	R 800 000	R 0	R 0	R 1 600 000
	OPEX	R 625 000	R 625 000	R 625 000	R 625 000	R 625 000	R 3 125 000
	TOTAL	**R 1 425 000**	**R 625 000**	**R 1 425 000**	**R 625 000**	**R 625 000**	**R 4 725 000**
Financial	CAPEX	R 800 000	R 400 000	R 400 000	R 0	R 0	R 1 600 000
	OPEX	R 67 311 420	R 67 311 420	R 67 311 420	R 67 311 420	R 67 311 420	R 336 557 100
	TOTAL	**R 68 111 420**	**R 67 711 420**	**R 67 711 420**	**R 67 311 420**	**R 67 311 420**	**R 338 157 100**
Social	CAPEX	R 11 071 064	R 10 271 064	R 10 271 064	R 10 271 064	R 10 271 064	R 52 155 320
	OPEX	R 20 221 660	R 20 221 660	R 20 221 660	R 20 221 660	R 20 221 660	R 101 108 300
	TOTAL	**R 31 292 724**	**R 30 492 724**	**R 30 492 724**	**R 30 492 724**	**R 30 492 724**	**R 153 263 620**
Technical	CAPEX	R 61 453 196	R 60 653 196	R 59 003 196	R 59 003 196	R 58 963 196	R 299 075 980
	OPEX	R 32 326 840	R 32 326 840	R 32 326 840	R 32 326 840	R 32 326 840	R 161 634 200
	TOTAL	**R 93 780 036**	**R 92 980 036**	**R 91 330 036**	**R 91 330 036**	**R 91 290 036**	**R 460 710 180**
Total	CAPEX	R 74 124 260	R 71 324 260	R 70 474 260	R 69 274 260	R 69 234 260	R 354 431 300
	OPEX	R 120 484 920	R 120 484 920	R 120 484 920	R 120 484 920	R 120 484 920	R 602 424 600
	TOTAL	**R 194 609 180**	**R 191 809 180**	**R 190 959 180**	**R 189 759 180**	**R 189 719 180**	**R 956 855 900**

Funding?

water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

Funding

- Latest Local Government Revenue and Expenditure Report reveals the following :
- Municipalities spent R233.9 of R264.8 billion (88.3%) adjusted budget at 30 June 2012. R30.9 billion not spent!!
- Aggregate municipal consumer debts were R77.6 billion at 30 June 2012.
  - Government's owe R3.2 billion (4.1%)
  - Households owe R50.8 billion (65.4%)

Funding…

- Metros owed R46.1 billion as at 30 June 2012. Represents an increase of R7.5 billion (19.3%).
- Concern that CoT and CoJ have highest growth rate in outstanding debtors – clear indication they are not collecting all billed revenue. Compared to previous financial year
  - Mangaung's debt has increased by 37.6 %,
  - City of Tshwane's increased by 34.5%
  - City of Joburg's increased by 26%.

Funding…

- The aggregate adjusted capital budget for all municipalities in the 2011/12 financial year was R46 billion, of which only R33.2 billion or 72.5 % had been spent by 30 June 2012. This reflects the challenges of planning for the implementation of capital projects.
- Status quo makes it difficult to motivate for additional funding. Municipalities need to improve budgeting and prioritise.

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WCWDM Strategy Summary (1)

- Institutional
  - Setup task team (chaired by EXCO member) to meet and report on monthly basis
  - Fill vacancies
  - Training and capacity building
  - Review charters, policies and bylaws and develop enforcement mechanisms – focus on removal of wasteful devices
- Finance
  - Prioritise funding for WC/WDM programme
  - Improve meter reading and billing through task team
  - Training and capacity building of staff (meter readers)
  - Review water tariffs to promote WC/WDM

WCWDM Strategy Summary (2)

- Social
  - WCWDM awareness campaign inside organisation starting with politicians and own department
  - WCWDM awareness campaign at university, schools, clinics and other government departments – removal of wasteful devices and installation of water efficient devices
  - WCWDM awareness campaign of general public through posters, brochures, radio
  - Promote reporting of leaks through CCC

WCWDM Strategy Summary (3)

- Technical
  - Improve management information and record keeping at municipal, district and zone level (Monthly water balance and night flow analysis)
  - Implement and maintain pressure management
  - Repair all visible leaks on private properties irrespective of metering status
  - Monitor top consumers on monthly basis
  - Meter unmetered properties and fix broken meters
  - ALC of bulk main (monthly) and network (annually)
  - Install telemetry to monitor night flows and reservoir levels
  - Asset management and documentation (preventative maintenance)

Benefits of WC/WDM

- Improved level of service
- Increased revenue and affordability
- Improved customer relations
- Educated and water efficient customers
- Job creation
- Water security
- Asset management
- Improved corporate governance
- Improved institutional arrangements

Thank you

water affairs
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REPUBLIC OF SOUTH AFRICA