Ekurhuleni Metropolitan Municipality

Presentations by Gauteng Metros / Municipalities
on
Water Conservation / Water Demand Management
VRS SSC

13 April 2011

Presentation Content

1. WDM Budget 2010/2011
2. Water Balance
3. Bulk Purchases and Projections (2010/2011)
4. WDM Projects (2010/2011)
   - Bulk Meter Consolidation (Top 500 Consumers)
   - Indigent Leak Repair Project
   - Bulk Meter Upgrading/Monitoring
5. Proposed WDM Projects (2011/2012)

WDM Budget (2010/2011)

WDM Related Projects Budget (2010/2011)

Type	SERVICE	Type1	TYPE2	Project Name	Budget (2010-2011)	Expenditure (March 2011)	Spending (%)
Midblocks	WATER	Network	Upgrade	Isolate Midblock water Kwa-Thema	R 1,000,000	R 77,241	7.7%
				Kathlehong: Relocate Mid-Block Water Pipes	R 500,000		0.0%
				Kwa-Thema: Upgrading of watermetwork C/F	R 2,000,000	R 874,920	43.7%
				Relocate midblock water Daveyton (W55) C/F	R 50,000	R 38,307	76.6%
				Relocate midblock water Vosloorus (MIG)	R 1,427,000	R 1,357,277	95.1%
				Replace midblock s lines in Thokoza C/F	R 5,600,000	R 1,608,460	28.7%
				Tembisa Relocate Mid-Blocks	R 37,151	R 37,151	100.0%
		Network Sum			**R 10,614,151**	**R 3,993,354**	**37.6%**
Midblocks Total					**R 10,614,151**	**R 3,993,354**	**37.6%**
WDM	WATER	Bulk	Upgrade	Alberton: Re-line water supply Delphinium str	R 4,125,000	R 963,691	23.4%
				Vosloorus: Replace water main supply	R 100,000	R 3,000	3.0%
		Bulk Sum			**R 4,225,000**	**R 966,691**	**22.9%**
		Meters	New	Installation of bulk water meters	R 14,850,000	R 1,989,109	13.4%
				Installation of Water Meters	R 32,720,264	R 2,052,621	6.3%
		Meters Sum			**R 47,570,264**	**R 4,041,730**	**8.5%**
		Network	Upgrade	Alberton: Replace gal water connections	R 600,000	R 68,709	11.5%
				Daveyton: Rehabilitate 450dia steel pipe	R 30,000	R 30,000	100.0%
				Germiston: Replace water pipes CBD	R 2,500,000	R 35,354	1.4%
				NE District: Upgrade Networks	R 16,923,000	R 817,392	4.8%
				Replace main water - Isekelo Tembisa	R 50,000		0.0%
				SW District: Upgrade Networks	R 16,785,900	R 1,362,180	8.1%
				Tembisa: Replace w/p Zephania str	R 50,000		0.0%
				Tembisa: Replace water pipe Isekelo	R 150,000		0.0%
				Upgrade water main (C/F) Selcourt	R 7,000,000	R 366,370	5.2%
				WDM Project Planning	R 3,000,000		0.0%
		Network Sum			**R 47,088,900**	**R 2,680,004**	**5.7%**
WDM Total					**R 98,884,164**	**R 7,688,425**	**7.8%**
Grand Total					**R 109,498,315**	**R 11,681,779**	**10.7%**

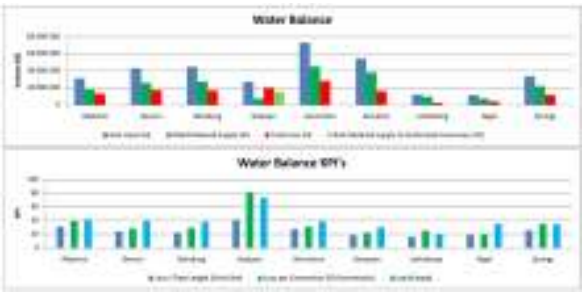
Ekurhuleni Water Balances

Ekurhuleni Service Delivery Areas (SDA)

Ekurhuleni Water Balance – February 2011

SDA	System Input Volume (kl/annum)	Billed Authorised Consumption (kl/annum)	NRW (kl/annum)	NRW %
Alberton	31,203,472	18,251,862	12,951,610	41.5%
Benoni	43,119,352	25,910,922	17,208,430	39.9%
Boksburg	44,574,828	27,645,016	16,929,812	38.0%
Brakpan	**27,008,938**	**7,195,185**	**19,813,753**	**73.4%**
Germiston	73,146,496	44,943,748	28,202,748	38.6%
Kempton Park	54,312,260	38,021,416	16,290,844	30.0%
Lethabong	12,075,000	9,743,318	2,331,682	19.3%
Nigel	11,411,695	7,397,212	4,014,483	35.2%
Springs	33,763,408	22,054,094	11,709,314	34.7%
Ekurhuleni (Feb 2011)	**330,615,449**	**201,162,773**	**129,452,676**	**39.2%**
Ekurhuleni (Jun 2010)	**322,821,747**	**193,973,397**	**128,848,350**	**39.9%**
Ekurhuleni (Jun 2009)	**329,424,656**	**201,338,050**	**128,086,606**	**38.9%**

Water Balance KPI's (Feb 2011)



Water Supply District Water Balances

SDA	WATER DISTRICT DMA	SALES (kl/annum)	NRW (kl/annum)	NRW (% System Input)	SYSTEM INPUT VOLUME (kl/annum)
Alberton	TOTAL SYSTEM (ALBERTON)	12,862,295	17,268,869	57.3%	30,131,164
Alberton Total		**12,862,295**	**17,268,869**	**57.3%**	**30,131,164**
Benoni	2486 (2486_5593)	8,173,137	8,992,763	52.4%	17,165,900
Benoni	BENONI CENTRAL (Benoni_Central)	3,664,854	6,165,692	62.7%	9,830,546
Benoni	1848	3,473,607	3,759,893	52.0%	7,233,500
Benoni	ACTONVILLE(RW0031) (31)	535,631	969,029	64.4%	1,504,660
Benoni	1849_2528	2,394,774	914,426	27.6%	3,309,200
Benoni	MODDER B (214_383_824)	0	892,522	100.0%	892,522
Benoni	KINGSWAY (RW4149) (4149)	334,780	313,970	48.4%	648,750
Benoni	RYNSOORDNEWMODDER (RW0052) (52_5596)	201,354	320,088	61.4%	521,442
Benoni	VAN RYN DEEP FIRE (1657)	0	165,391	100.0%	165,391
Benoni	RYNGLEN (2467)	68,051	107,429	61.2%	175,480
Benoni	POWER CRUSHERS NEW MODDER (1836)	0	42,086	100.0%	42,086
Benoni	VLAKFONTEIN (3939_3971)	0	14,117	100.0%	14,117
Benoni	MODDERFONTEIN (33)	0	3,188	100.0%	3,188
Benoni	0036 (36)	507,816	-432,836	-577.3%	74,980
Benoni Total		**19,354,004**	**22,227,758**	**53.5%**	**41,581,762**
Boksburg	JET_MADELEY_IMPALA (Bok_North)	7,129,123	10,256,821	59.0%	17,385,944
Boksburg	VOSLOORUS (RW2622) (2622)	7,384,688	4,446,312	37.6%	11,831,000
Boksburg	DAWN PARK+ SUNWARD PARK (Bok_South)	3,004,652	4,788,193	61.4%	7,792,845
Boksburg	VOGELFONTEIN(RW 3976) (Bok_Cen)	2,577,483	5,033,911	66.1%	7,611,394
Boksburg	MAPLETON (FROM GERMISTON)	194,037			0
Boksburg Total		**20,289,982**	**24,525,238**	**55.0%**	**44,621,183**
Brakpan	TSAKANE_LANGAVILLE_LABORE_GELUKSDAL (3510)	765,346	13,915,354	94.8%	14,680,700

Prioritisation – Sort zones from highest to lowest NRW

Sorted from highest to lowest NRW

Priority	SDA	WATER DISTRICT DMA	SALES (kl/annum)	NRW (kl/annum)				Accumulated NRW (% of total)
1	Brakpan	TSAKANE_LANGAVILLE_LABORE_GELUKSDAL (3510)	869,821	13,810,879	94.1%	14,680,700	13,810,879	10.8%
2			12,576,835	9,224,685	42.3%	21,801,520	23,035,564	18.0%
3			9,200,085	7,965,815	46.4%	17,165,900	31,001,379	24.3%
4		dge_Combined)	13,630,844	7,624,876	35.9%	21,255,720	38,626,255	30.2%
5			10,117,981	7,267,963	41.8%	17,385,944	45,894,218	35.9%
6	Germiston	Palm Ridge (2272)	10,265,967	4,426,533	30.1%	14,692,500	50,320,751	39.4%
7	Springs	PAM BRINK (1746, 1880) (1746_1880)	5,927,740	4,417,760	42.7%	10,345,500	54,738,511	42.8%
8	Kempton	TEMBISA (RW1744) (1744)	8,065,395	4,332,805	34.9%	12,398,200	59,071,416	46.2%
9	Germiston	CREDI RESERVOIR AND TOWER (259)	6,681,114	4,327,256	39.3%	11,008,370	63,398,672	49.6%
10	Boksburg	VOSLOORUS (RW2622) (2622)	7,552,848	4,278,152	36.2%	11,831,000	67,676,824	53.0%
11	Boksburg	DAWN PARK+ SUNWARD PARK (Bok_South)	3,926,202	3,866,643	49.6%	7,792,845	71,543,467	56.0%
12	Benoni	BENONI CENTRAL (Benoni_Central)	6,055,699	3,774,847	38.4%	9,830,546	75,318,314	58.9%
13		(2636_2646_5589)	2,984,070	2,997,970	50.1%	5,982,040	78,316,284	61.3%
14			4,258,751	2,974,749	41.1%	7,233,500	81,291,033	63.6%
15			4,758,935	2,852,459	37.5%	7,611,394	84,143,492	65.8%
16			4,472,974	2,633,226	37.1%	7,106,200	86,776,718	67.9%
17	Germiston	ZONE 110 (Windsor Road) (1389)	2,225,675	2,621,525	54.1%	4,847,200	89,398,243	69.9%
18	Germiston	BEDFORDVIEW FIRE (17)	0	2,571,090	100.0%	2,571,090	91,969,333	72.0%
19	Kempton	KEMPTON WEST RESERVOIRS (1632)	5,332,614	2,002,786	27.3%	7,335,400	93,972,119	73.5%
20	Germiston	RW2107 (2107)	1,047,036	1,879,734	64.2%	2,926,770	95,851,853	75.0%
21	Brakpan	SALLIES TOWER (Combined)	1,373,773	1,874,387	57.7%	3,248,160	97,726,240	76.5%
22	Kempton	CLAYVILLE (1900)	5,466,885	1,346,115	19.8%	6,813,000	99,072,355	77.5%
23	Kempton	UMTAMBEKA RESERVOIR (2744)	1,654,317	1,205,043	42.1%	2,859,360	100,277,398	78.5%
24	Lethabong	SANDOVALE (RW1643) (1643)	2,742,921	1,193,379	30.3%	3,936,300	101,470,777	79.4%
25	Germiston	ZONE 150 (Roodekop Township) (1208)	1,289,416	1,155,374	47.3%	2,444,790	102,626,151	80.3%
26	Springs	PAPER FACTORIES (988)	6,048,430	1,052,180	14.8%	7,100,610	103,678,331	81.1%
27	Kempton	CHLOORKOP (3862)	1,625,715	979,172	37.6%	2,604,887	104,657,503	81.9%
28			3,851,176	972,124	20.2%	4,823,300	105,629,627	82.6%
29			1,427,749	954,277	40.1%	2,382,026	106,583,904	83.4%
30	Springs	PERSIDA (RW3774) (3774)	913,347	915,323	50.1%	1,828,670	107,499,227	84.1%
31	Benoni	ACTONVILLE(RW0031) (31)	781,437	743,223	48.8%	1,504,660	108,242,450	84.7%

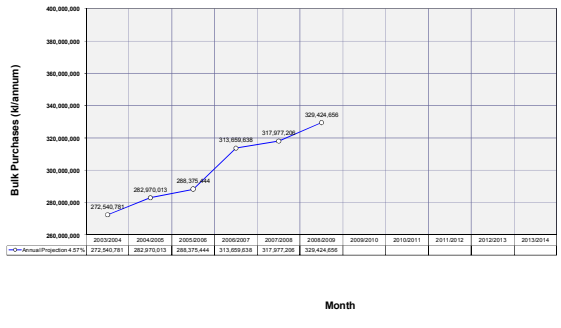
Short Term: DWA Target Saving for Ekurhuleni is 28,3 Mm³/annum

Medium Term: 25 out of 82 DMA are responsible for 80% of water losses

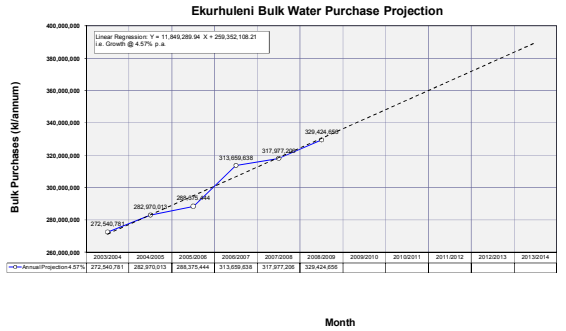
Longer Term: Remainder

Bulk Purchases and Projections (2010/2011)

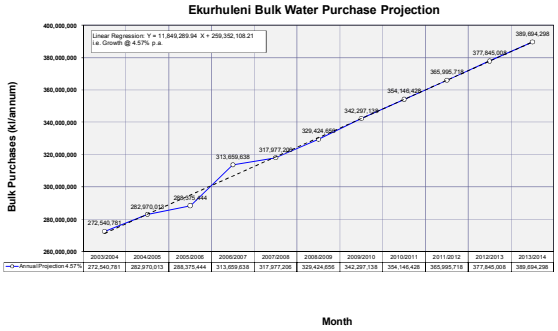
Historical Bulk Purchases



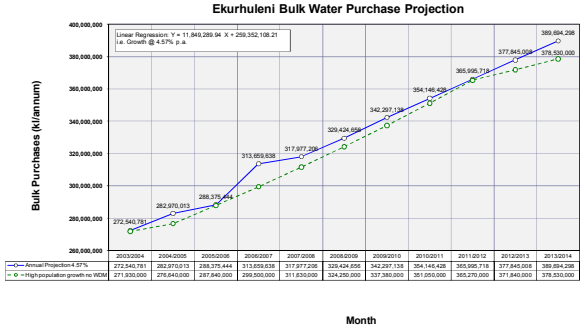
Least Squares Linear Regression



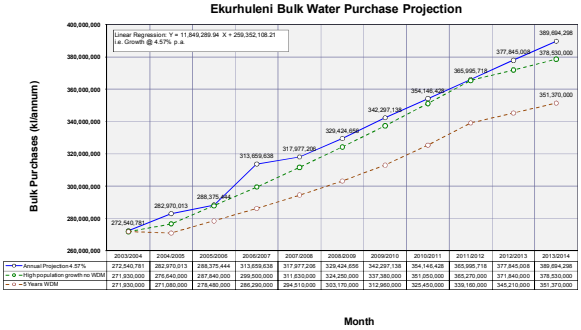
Calculate Projected Demand



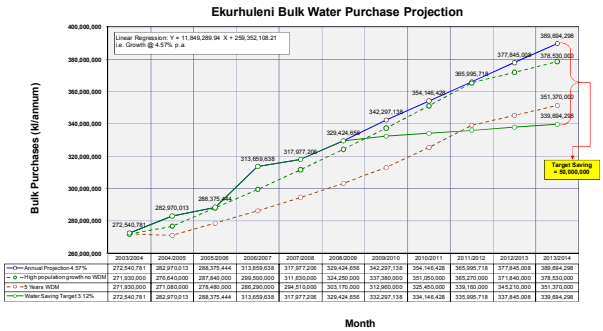
DWA High Population Growth Demand Projection



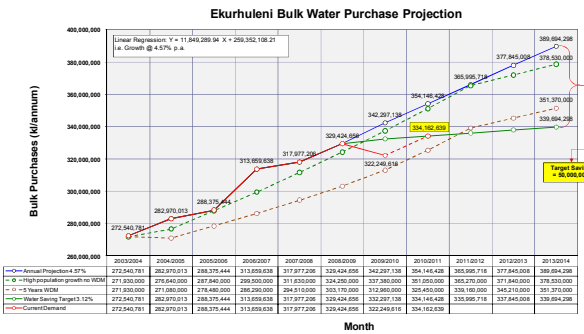
DWA 15% Water Saving Target (With WDM)



Ekurhuleni Water Saving Target



Demand Projection (September 2010)



Demand Projection (31 March 2011)

Bulk Meter Consolidation (Top 500 Consumers)

Problem Statement

A few Large Consumers are responsible for a large percentage of bulk purchases in Ekurhuleni

A survey of a few top consumers meters revealed the following:

- **Unmetered connections**:
  - Meter data incorrectly captured on financial system (serial numbers, size, factor, type etc.)
  - Fire connections generally are not metered
  - Some properties are unmetered
  - Meters inside properties are locked with no access to read meters

Problem Statement (Cont.)

- **Faulty water meters:**
  - Cases were found whereby a consumer only require one 50 mm or 80 mm connection but have from one and in some instances up to three x 150mm Ø connections
  - Meters unreadable due to the meters faces that have been damaged.
  - Meters are stuck (not turning)
  - Meters completely covered and not read.
- **Database inaccuracies:**
  - Metered found not to be on the database and therefore not billed
  - Meters allocated to the wrong property or feeding two properties
  - Multiple meters – in some instances it was found that some consumers had 8 or more meters that were still active but only a few were on the database
  - Incorrect meter factor that has huge impact on correct consumption and income and the other way round

Bulk Meter Consolidation (Top 500 Consumers) – Phase 1

CCC Area	Completed Data Uploaded			Overall Progress
	Number of Properties	Property Data Corrected on System	Percentage	
Alberton	12	0	0.00%	56.25%
Benoni	10	1	10.00%	57.50%
Boksburg	24	0	0.00%	62.50%
Boksburg 2	1	0	0.00%	25.00%
Brakpan	24	7	29.17%	78.13%
Germiston	50	0	0.00%	30.50%
Kempton Park	38	0	0.00%	55.92%
Springs	22	11	50.00%	86.36%
Total Phase 1	181	19	12.74%	56.52%

Bulk Meter Consolidation (Top 500 Consumers) – Phase 2

Area	Completed Data Uploaded			Overall Progress
	Number of Properties	Property Data Corrected on System	Percentage	
Alberton	20	0	0.00%	42.50%
Benoni	21	0	0.00%	25.00%
Boksburg	77	0	0.00%	45.13%
Brakpan	0	0		0.00%
Germiston	0	0		0.00%
Kempton Park	22	0	0.00%	43.18%
Springs	0	0		0.00%
EMM General	38	0	0.00%	33.55%
Total Phase 2	178	0	0.00%	22.26%

Indigent Leak Repair Project

Background

- Registered indigent householders in Ekurhuleni are entitled to a free basic allocation of 9 kl/household/month.
- Consumption in some indigent households far exceeds this allocation due to excessive leakage on their properties. This is a direct loss to the municipality as water is not only wasted but no payment is received for the wastage.
- Ekurhuleni decided to embark on a pilot project of all registered indigent households to assess the impact of fixing their internal plumbing leaks and to establish the impact of such a project on saving water and money.

Objective

- The project objective was to identify and target indigent households with a high volume of water consumption and repair internal plumbing leaks in order to reduce water losses and wastage resulting from leaks
- This will benefit the EMM by ensuring that these households continue to receive an adequate water and sanitation service but with reduced wastage caused by leaks and lack of water conservation education

Budget

YEAR	EMM BUDGET	CO-FUNDING (Rand Water)	TOTAL BUDGET	EXPENDITURE	% EXPENDITURE
2009/2010	R 1,350,000.00	R -	R 1,350,000.00	R 1,650,000.00	122%
2010/2011	R 2,000,000.00	R 2,400,000.00	R 4,400,000.00	R 2,056,514.27	47%
2011/2012	R 2,160,000.00	R 2,000,000.00	R 4,160,000.00		0%
Total	**R 5,510,000.00**	**R 4,400,000.00**	**R 9,910,000.00**	**R 3,706,514.27**	**37%**

Statistics (Feb 2011)

NUMBER OF HOUSEHOLDS ASSESSED:	
Area Based	2604
Consumption Based	1878
Total	**4482**
NUMBER OF HOUSEHOLDS REPAIRED:	
Area based	1768
Consumption based	615
Total	**2383**
GRANT TOTAL: AUDITED & REPAIRED	**6865**
% repaired	**53%**

Project Impact (2010/2011)

Contractor Expenditure (Excl VAT)	R 1,828,037.06	88.9%
Consultant Expenditure (Excl VAT)	R 228,477.21	11.1%
Total Expenditure (Excl VAT)	R 2,056,514.27	100.0%
Average repair cost per house:	R 818	
Consultants	R 51	
Contractor	R 767	
Average Consumption (Before) (kl)	59.65	kl
Average Consumption (After) (kl)	15.49	kl
Water saving/household (kl)	44.16	kl
Potential water saving/house/annum (Rands)	R 2,135.58	
Benefit/Cost Ratio	2.61	
Payback Period	+/- 5	months

Conclusion

- Significant savings can be achieved by repairing internal plumbing leaks on private properties especially on properties from which very little or now payment is received
- Sustainability remains a challenge – A Management Information System and O&M Systems need to go hand-in-hand with the project
- The project will be extended to include all households in specific areas (Internal Plumbing Leak repair Project)

Proposed WDM Projects (2011/2012)

Short Term WC/WDM Initiatives

- EMM has prepared a WC/WDM Guideline and WC/WDM Strategy according to which WDM should be identified
- EMM also has a WC/WDM Task Team with a very specific Terms of Reference
- The WC/WDM Task Team has identified the following Short Term Projects:
  - Tsakane/Langaville/Geluksdal (Zone Approach)
  - Prepare As-and-When Tenders for:
    - Wadeville (Turnkey)
    - Steel Pipes > 400mmØ: Condition Assessment & Cathodic Protection
    - Control Valves
    - Leak Repair on Private Properties
  - North Ridge/Isando Pressure Management
  - Data Cleansing: Locate unbilled stands or stands with access to water
  - Update Water Services Bylaws

Thank You