Presentation on
Water Loss Management

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CoT STATISTICS (before merger)

- 9525 km of bulk and distribution mains
- 137 storage reservoirs with 1 690 Ml storage
- 28 water towers with 10,4 Ml storage
- 360 Control Valves (PRV's, Flow control etc)
- 240 Bulk Management Meters
- 400 000 Consumer connections

NRW CALCULATION 2010 2011

Month June 2011

Total Bulk input = 287 397 001 kl/year
Formal Water Sales = 186 179 767 kl/year
"Sales" to Informal Areas = 31 049 962 kl/year

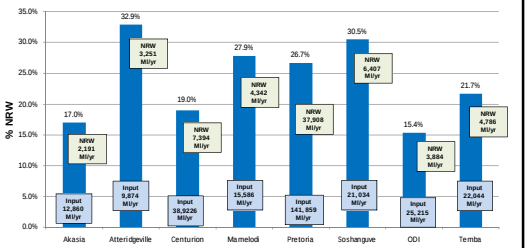
NRW = Total Bulk input – (Formal Water Sales + "Sales" to Informal Areas) / Total Bulk input

= 70 167 272 / 287 397 001 X 100

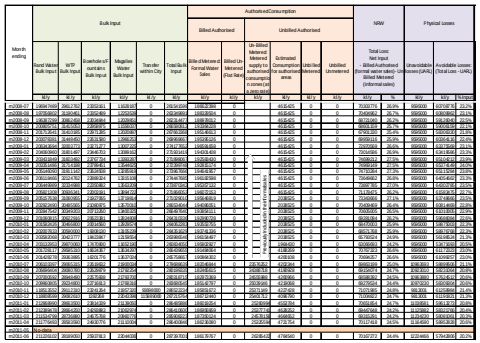
= 24,4%

NRW FOR CoT SUPPLY AREAS

(12 Month Period Ending June 2011)

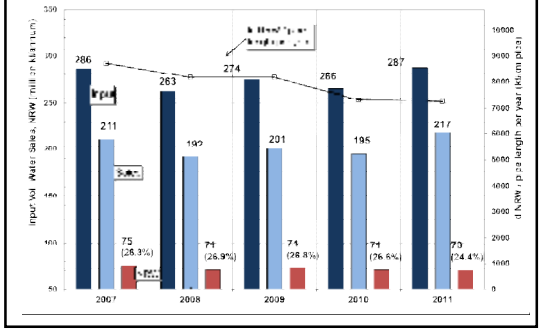


NRW FOR CoT SUPPLY AREAS



CoT NRW

Source: NRW figures from W&S
figures ending June for each financial year



ACTIONS UNDERTAKEN BY WATER AND SANITATION TO REDUCE NRW AND DEMAND

CoT WATER DEMAND STRATEGY

Item No.	Description	Max Points	Score
1	Development of Standard Water Balance	4	3
2	Pressurised Supply to all consumers 100% of time	4	4
3	Commercial and Industrial Metering System	4	3
4	Residential Metering System	4	3
5	Effective Billing System including Informative Billing	4	3
6	Network (Leakage) Complaints System	4	3
7	Billing and Metering Complaints System	4	2
8	Asset Register for Water Reticulation System	4	3
9	Asset Management - Capital Works	4	3
10	Asset Management - Operations and Maintenance	4	2
11	Dedicated WDM support	4	3
12	Active Leakage Control	4	2
13	Effective Sectorisation	4	3
14	Effective Bulk Meter Management	4	3
15	Credit Control Policy and Implementation	4	3
16	Pressure Management and Maintenance of Pressure Reducing Valves	4	2
17	As-Built Drawings of Bulk and Reticulation Infrastructure	4	3
18	Schematic Layout of Water Infrastructure	4	4
19	Regulation of Water Fittings	4	1
20	Implementation of By-Laws and National Standards or better	4	3
21	Technical Support to Customers	4	2
22	Removal of Illegal Connections	4	2
23	Community Awareness and Education Programmes	4	2
24	Schools Awareness and Education Programmes	4	2
25	Newspaper & radio articles plus posters and leaflets for distribution	4	1
	Totals	**100**	**65**

INFORMAL AREAS

Calculation of estimated consumption:

- **Base consumption figures obtained from actual metered consumption values in similar developments (kl/day/Ha)**
- **Area of informal development determined from 2009 aerial photos, site inspections etc (Ha)**
- **Base consumption value applied to informal development to obtain estimated consumption volume**
- **Volume applied in NRW calculation for zone**

METER AUDITS IN CoT INDUSTRIAL AREAS

- **Audit of all connections in industrial areas (large users)**
- **Locate un-metered connections**
- **Identify and replace all old, broken, illegible meters**
- **Ensure all meters are on billing system**
- **Impact already determined for some areas**

METER AUDITS IN INDUSTRIAL AREAS
Impact of audits and meter replacements

Area	No. of Conn	Increase in Metered Consumption (kl/yr)	Cost (R)	Water Tariff: Increase in Revenue (R/yr)	Sanitation Tariff: Increase in Revenue (R/yr)	Total Increase in revenue (R/yr)	Return Period (Months)
Rosslyn North	138	60 000	R 338 541	R 595 200	R 138 600	R 733 800	6
Rosslyn South	236	36 000	R 438 238	R 357 120	R 83 160	R 440 280	12
Pretoria Indus	144	108 000	R 455 897	R 1 071 360	R 249 480	R 1 320 840	4
Waltloo ; Silverton-dale	550	43 968	R 800 000	R 430 211	R 100 180	R 530 391	18
Pretoria West Light Industrial	355	83 460		R 827 923	R 192 793	R 1 020 716	
Koedoespoort	93	68 028		R 674 838	R 157 145	R 831 982	
Hermanstad	189	100 272		R 994 698	R 231 628	R 1 226 327	
Rooihuiskaal	90	Currently Being Determined					
Hennopspark	168	63 768		R 632 579	R 147 304	R 779 883	
Sunderland Ridge	169	25 644		R 254 388	R 59 238	R 313 626	
Lyttelton Manor	52	4 080		R 40 474	R 9 425	R 49 898	
Pretoria North	253	3 936		R 39 045	R 9 092	R 48 137	
Pretoria Street (Silverton)	159	19 836		R 196 773	R 45 821	R 242 594	
Gezina	217	32 160		R 319 027	R 74 290	R 393 317	
Kirkney	60	4 464		R 44 283	R 10 312	R 54 595	
Total	2 873	653 016		6 477 919	1 508 457	7 986 386	

Water Tariff Used : R9.92/kl
Sanitation Tariff Used: 60% of increase in metered consumption @ R3.85/kl

PRESSURE MANAGEMENT (e.g. NELMAPIUS EXT 8)

- **No consumer meters installed in Nelmapius X8 (high leakage)**
- **Special pressure reducing valve (PRV) fitted to handle high pressure reduction ratio**
- **Electronic Time Modulated Controller fitted onto PRV to reduce pressure further during night**

PRESSURE MANAGEMENT INTERVENTIONS BY CoT OVER LAST FEW YEARS

Pressure Management initiatives (excluding annual servicing of all pressure reducing valves)

Pressure management Area	Savings kl/yr	Savings in R/yr (Based on R4.39/kl)
Mamelodi Ext 11	20 000	87 000
Nelmapius Ext 3,4	365 000	1 602 000
Nelmapius Ext 8	230 000	1 009 000
Valhalla	52 000	228 000
Lotus Garden	100 000	439 000

ODI – PRV Installations – Summary of Savings

Meter #	Average Flow before PM (kl/h)	Average Flow after PM (kl/h)	Savings in Average Flow (kl/h)	Savings / Year (kl)
Meter 53	2.2	1.8	0.4	3 504
Meter52	15.2	6.1	9.1	79 716
Meter 51	1.9	1.4	0.5	4 380
Meter 62	3.4	0.7	2.7	23 652
Meter 50	3.8	2.4	1.4	12 264
Meter 55	29.6	24	5.6	49 056
Meter 56	33.5	24.6	8.9	77 964
Erasmus	1.2	0.9	0.3	2 628
Hebron	240	195	45	394 200
Hebron E	23.5	12.4	11.1	97 236
TOTAL	**354.3 kl/h**	**269.3 kl/h**	**85 kl/h**	**744 600 kl**

SUMMARY OF WDM INTERVENTIONS BY CoT OVER LAST FIVE YEARS

- **Preparing detailed monthly water balance (very few municipalities in RSA prepare regular water balances)**
- **Meter Audits in 15 Industrial Areas (2427 connections audited) 126 unmetered connections located, 240 existing meters required replacement. Results determined for 4 of 15 areas to date. Increase in Revenue for CoT for 4 areas = R3mil/yr.**
- **Meter Audits for all irrigated road islands (293 connections): 7 unmetered connections located, 66 meters require replacement. Impact to be determined by mid 2011.**

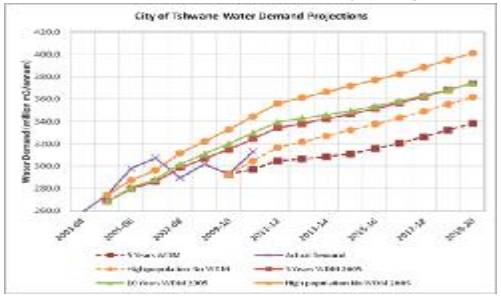
SUMMARY OF WDM INTERVENTIONS BY CoT OVER LAST FEW YEARS

- **2179 domestic meters installed for unmetered houses in Mamelodi and Soshanguve in 2009. If a low consumption of 15kl per property per month assumed then additional metered consumption of 292 220kl/yr @ R6.71 = additional income of R2.6 mil/yr.**
- **32760 bursts/leaks repaired per year**
- **50927 water meters replaced per year**
- **282,2 km length of mains replaced from 2005 to August 2011**

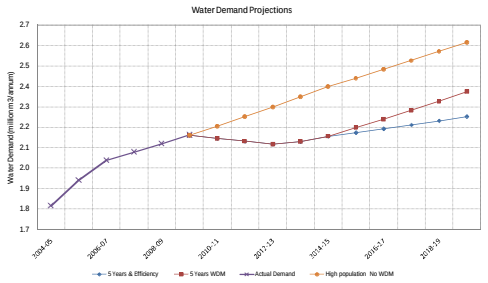
SUMMARY OF WDM INTERVENTIONS BY CoT OVER LAST FEW YEARS

- **582 illegal connections found and removed/legalised in 2009/10 (this excludes un-metered connections located in industrial areas)**
- **30 School's workshops held in 2010/11 to promote water conservation**
- **90 Community workshops held in 2010/11 to promote water conservation reaching 2881 community members**

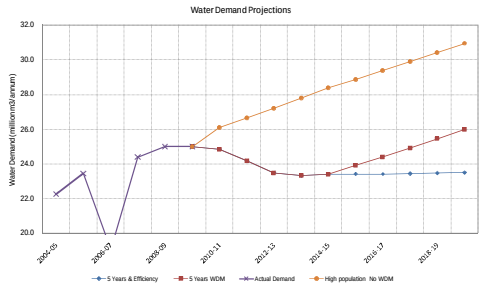
DWA PROJECT 15% WATER DEMAND TARGET FOR CoT (PROJECT AIMED AT REDUCING WATER DEMAND BY 15% by 2015)



DWA PROJECT 15% WATER DEMAND TARGET FOR NOKENG (PROJECT AIMED AT REDUCING WATER DEMAND BY 15%)



DWA PROJECT 15% WATER DEMAND TARGET FOR KUNGWINI (PROJECT AIMED AT REDUCING WATER DEMAND BY 15%)



ACHIEVEMENTS OF CoT REGARDING WATER LOSS REDUCTION

- First prize in DWA national Water Demand Management Sector Awards in 2009.
- Over the last three years CoT has managed to reduce the water demand and water losses consistently
- The CoT has one of the lowest percentages NRW of all Metros in the RSA
- CoT is one of the few Municipalities/Metros that is currently succeeding in achieving the required water demand targets set by DWA for project 15%

Thank You