

Regional Water Leakage Summit 2013

André Kowalewski
23 August 2013



Drakenstein Municipality
"A Place of Excellence"




WATER DEMAND MANAGEMENT & CONSERVATION SUCCESSSES SINCE 2000



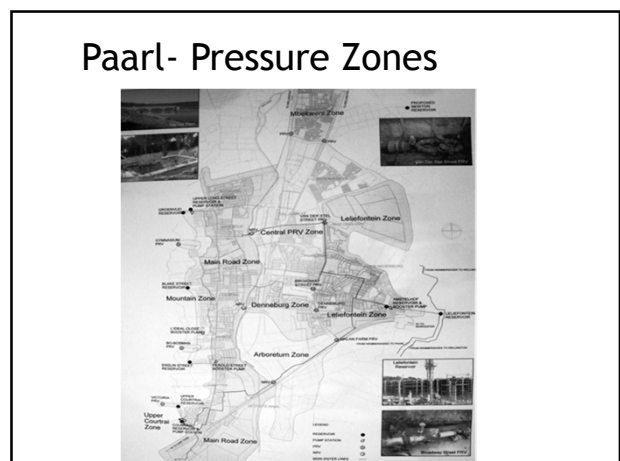
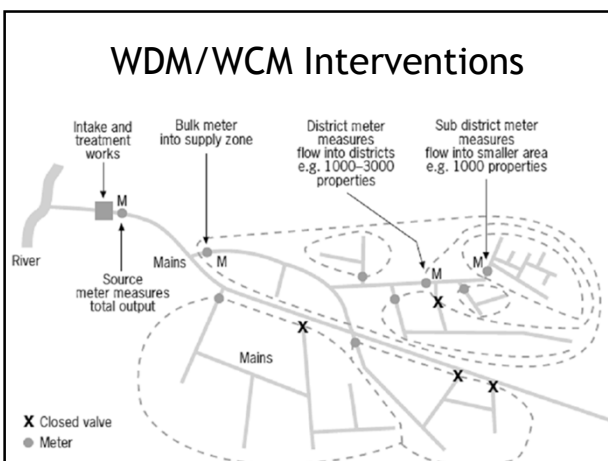
Introduction

- Water losses in DM where in excess of 34% /a with a steady growth of 3.5%/annual
- During 1999/2000 the CES department took a decision to reduce water losses and conserve water, improve the non-financial/water loses
- Drakenstein Municipality Stats & General information
 - Population of about 255 000 (61 000 Households).
 - Water demand of 18000ML/a for Paarl.
 - Has 650 km of pipes ranging from 50mm Ø to 1000mm Ø.
 - A total of 28 reservoirs with capacities of 0.8ML to 100 ML.
 - 16 booster pump systems.
 - Covers a service area of ± 85 km from Simondium to Saron
 - Bulk water supply of Paarl and Wellington is from Wemmershoek Dam
 - 2 Dams on Paarl Mountain supplying ±12% of the total demand of Paarl and Wellington.
 - Gouda and Hermon are dependent on Voëlvlei Dam.
 - While Bainskloof and Saron's portable water comes from Witte River and Leeu River respectively.



WDM/WCM Interventions

- The following Water Demand Management and Conservation interventions where established.
 - Hydraulic Modeling of water reticulation network for all towns.
 - Introduction of a five step rising block tariff scheme.
 - Pressure Management Initiative was implemented.
 - Metering of all unmetered water connection and metering of all fire fighting water connections.
 - Increased public awareness and promotion of water saving devices.
 - Refurbishment/replacement of existing water network.



Rising block tariff structure

Kiloliters per connection per month	Tariff Incl Vat (R) 2011/2012	Tariff Incl Vat (R) 2012/2013
0 – 10 kl	Free	Free
11 – 30 kl	6.48	7.52
31 – 55 kl	10.40	12.06
56 – 80 kl	13.41	15.55
Above 80 kl	18.07	20.96
Above 1000 kl	24.18	28.05

Public Awareness Programmes

WHAT DOES IT MEAN TO BE WATER WISE?

To be **WWD** means to take the knowledge you have gained and use it to benefit yourself and others, including plants and animals, without causing harm. Did you know there are 600 "Water Wise" in every "Water Wise"?

3. Fix the Water, Rip out the Leak
As the only water utility in the world without water connections for free, we need you to help us keep our water connections safe. This means you should check your water connections for leaks and report them to us immediately. This means you should check your water connections for leaks and report them to us immediately. This means you should check your water connections for leaks and report them to us immediately.

4. Don't Waste Water
If you're not sure if you're using water correctly, you can always ask us for help. We'll be glad to come to your home and show you how to use water correctly. We'll also be glad to show you how to use water correctly. We'll also be glad to show you how to use water correctly.

5. Don't Pollute Water
If you pollute water, you pollute the water supply. This means you should check your water connections for leaks and report them to us immediately. This means you should check your water connections for leaks and report them to us immediately. This means you should check your water connections for leaks and report them to us immediately.

6. Correctly Waste
Correctly waste water is important for all the earth and that's why we need to conserve it. To conserve water, we need you to help us. This means you should check your water connections for leaks and report them to us immediately. This means you should check your water connections for leaks and report them to us immediately.

DRAKENSTEIN WATER WEEK

Community Posters, Signage, Leaflets and Information in Accounts

Drakenstein Municipality / Munisipaliteit
Water Quality / Waterkwaliteit
AUGUST 2012

Description of test / Beskrywing van toets	Frequency / Frekwensie	Average test result for potable water test samples at 100 randomly selected residential water distribution connections at				
		Drakenstein	Winkelburg	Stellenbosch	Worcester	Claremont
pH	6.0 - 9.5	8.6	8.4	7.8	7.9	9.0
Electrical conductivity (µmhos/cm)	<1500	7.9	5.7	4.2	13.2	14.8
Total hardness (mg/l as CaCO ₃)	0 - 25	39	39	29	15	38
Total hardness (mg/l as CaCO ₃)	0 - 25	187	169	166	28	108
Total hardness (mg/l as CaCO ₃)	0 - 25	0.5	1.3	0.5	0.5	0.8
Free Chlorine (mg/l as Cl ₂)	0.2 - 0.5	0.27	0.19	0.1	0.1	0.11
Total Chlorine (mg/l as Cl ₂)	10 max	0	0	0	0	0
Total Chlorine (mg/l as Cl ₂)	0	0	0	0	0	0
EC (µmhos/cm)	<100	4	0	6	4	15
Colour (mg/l Pt)	<10	1	0	0	0	0
Number of samples below standard (per 1000 samples)	Total 40	27	11	4	2	3

WATERWEEK 2011 SONG AND POSTER COMPETITION
PAARL TOWN HALL
19 APRIL 2011
GRADE R-3

09:00:00:00 Welcome
09:05:00:00 Opening by Mayor
Grade R-3 Song presentation
09:20:00:00 Paarlse Primêre 10:10:00:00 Break
09:30:00:00 Nederburg Primêre 10:30:11:00 Announcement of winners
09:40:00:00 Wilgenkraal Primêre Grade R-3 poster competition
09:50:00:00 Charlton Hill Primêre Grade R-3 song competition
10:00:10:00 Nuweveld Primêre

Metering of all unmetered connections including parks, gardens and public open spaces

Promotion of water saving devices during annual Water Week

Refurbishment/Replacement of network infrastructure

Refurbishment/Replacement of network infrastructure



Leak Detection /Repair



Pressure Management



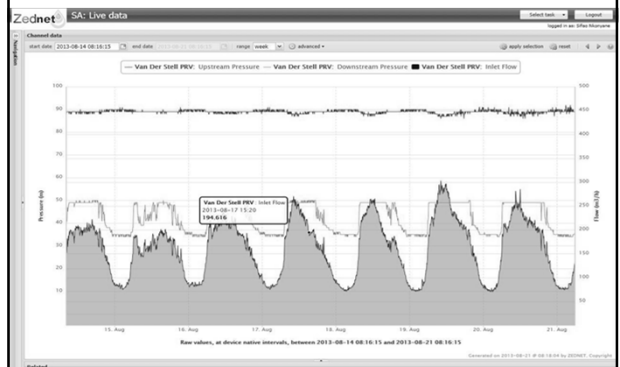
Pressure Management

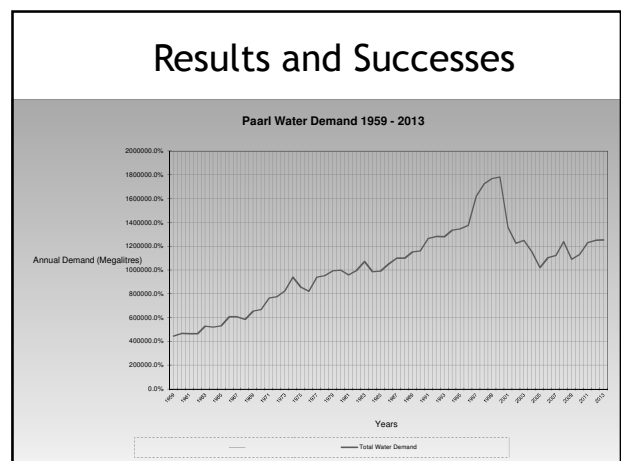
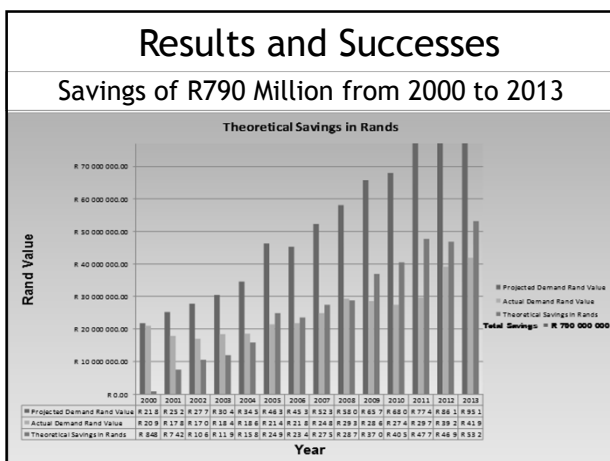
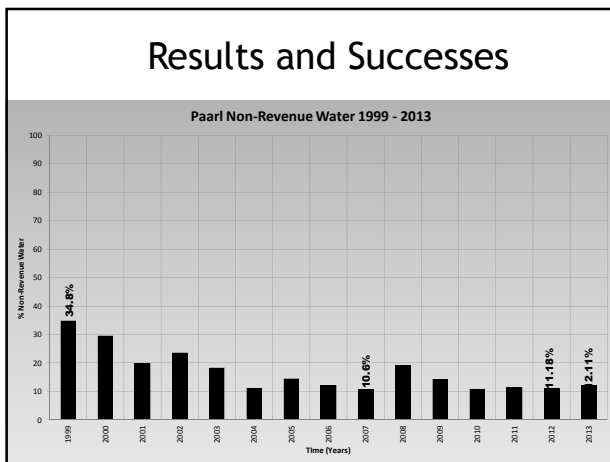
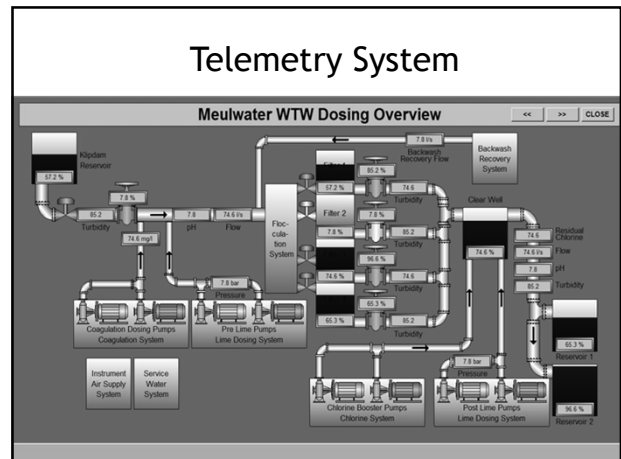
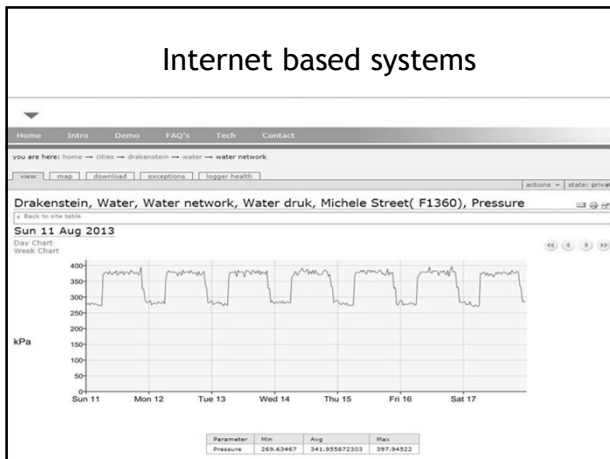


Pressure Management

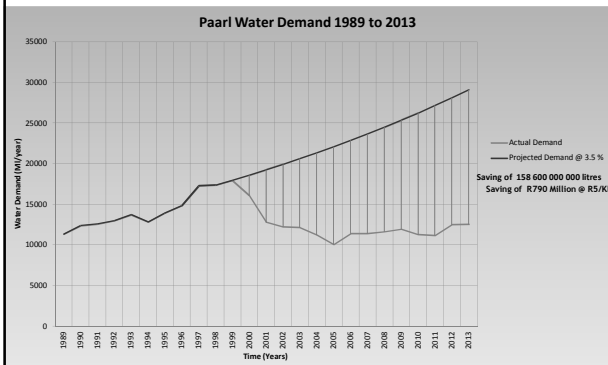


Internet based systems





Results and Successes



Results and Successes

Table 10.1: Non-revenue water for the various distribution systems

Description	Unit	Record : Prior (Ml/a)					
		12/13	11/12	10/11	09/10	08/09	07/08
Paarl and Wellington	Volume	2 031.439	1 839.784	1 818.452	1 624.675	2 129.013	3 041.551
	Percentage	12.08%	11.05%	10.81%	10.20%	13.75%	18.12%
	ILI	2.23	Paarl 1.28 Wel 1.14	Paarl 1.84 Wel 1.33	Paarl 1.31 Wel 0.74		
Saron	Volume	60 456	63 060	148 941	183 005	136 935	287 798
	Percentage	10.87%	10.72%	25.05%	28.59%	22.94%	44.46%
	ILI	1.92	1.97	3.31	3.46		
Gouda	Volume	34 809	30 885	28 985	22 791	17 222	21 022
	Percentage	19.98%	19.95%	16.66%	15.65%	11.64%	14.25%
	ILI	2.82	2.59	2.81	1.64		
Hemon	Volume	1 958	16 885	16 365	13 562	19 953	6 533
	Percentage	5.24%	35.20%	43.80%	39.97%	59.10%	19.94%
	ILI	0.42	3.72	3.78	3.38		
Bainskloof	Volume	0 671	1 649	0 579	0 452		
	Percentage	17.41%	40.65%	12.30%	11.93%		
	Volume	2 129.333	1 952.243	2 015.382	1 824.485	2 303.123	3 356.981
TOTAL	Percentage	12.11%	11.19%	11.43%	10.94%	14.15%	19.85%
	ILI	2.13	1.98	2.87	1.21		

Note: Infrastructure Leakage Index (ILI) for developed countries: 1 – Excellent (Category A), 2 – Good (Category B), 4 – Poor (Category C) and > 8 – Very Bad (Category D)

Typical Pressure Reducing Valve installation at Paarl



Advanced Pressure Reducing Valve installation at Paarl



New 2Ml Gouda Reservoir valve chamber



Bulk Water Infrastructure



Standard Meter Installation



Upgraded Pump Station -
Leliefontein Reservoir, Paarl



New machine room at
Meulwater WTW



Refurbishment of Perold
Booster Pump Station



Refurbishment of Ysterbrug Pump
Station - 22 August 2013



Refurbishment of L`Ideal Close
Booster Pump Station - Valve
Chamber



Challenges

- • Vandalism of Infrastructure.
- • Retaining of skilled personnel.
- • Training of personnel.
- • Funding of projects.
- • Sustainability.

Conclusions

To sustain the Water Demand Management efforts obtained by Drakenstein Municipality the following strategy were followed, namely:

- Proper record keeping of data and information regarding the infrastructure (including flow measurements)
- Historical information of the whole reticulation systems.
- Training for personal and using the correct equipment for all day to day operations
- Refurbish reticulation system using quality materials
- Preventative maintenance program (maintaining of valves, pumps and equipment before it become problem)
- Reduce pipe repair reaction time (attend to water burst pipe incidents, i.e. 1 hour of less)
- Keep to the basic.

Acknowledgements

- Mr. S Nkonyane D le Roux & Hein Henning from Drakenstein Municipality.
- Drakenstein Municipality Council who approved, supported and financed the Pressure management part of the WDMS.
- Raymond Vermeulen (4Watersupplies) for his advice & input in the installation and maintenance of the PRVs and Controllers.
- Jaco Human from Worley Parsons for statistical information.



Thank You