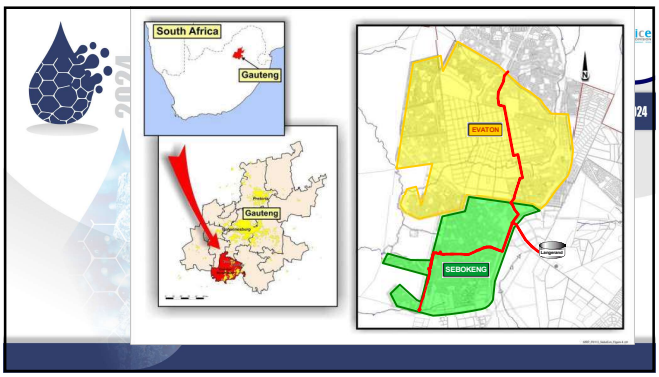

1




2

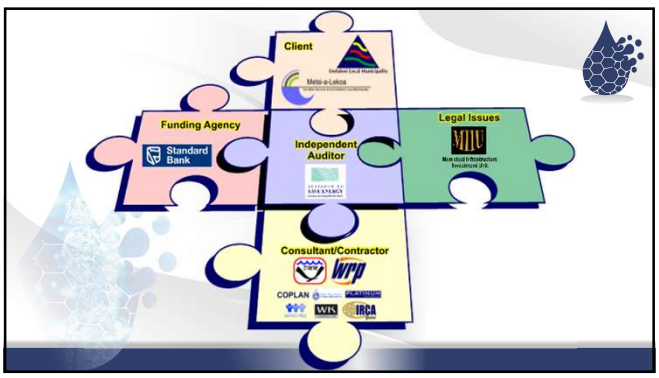
## Sebokeng/Evaton background (2005)

- Approximately 500 000 residents
- Average pressure 30m to 60 m
- Most taps and toilets were leaking
- Approximately 80% sewage return flows
- Annual water use ± 34 million $m^3$/yr
- Annual water cost ± R 90 million $m^3$/yr (@R2.7/ $m^3$)

3

4

5




6

## Sebokeng / Evaton Pressure Management Project

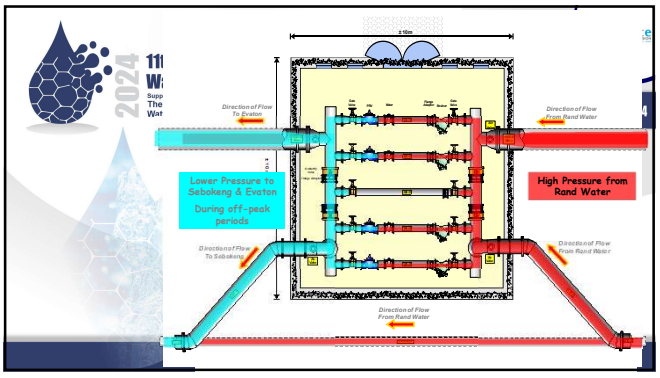
- Reduce internal plumbing leakage through Pressure Control
- Improve the level of service
- Private funded PPP – including all capital costs
- Paid from savings over 5 years
- Independent Auditor
- Savings capped at 15%

7


8

## THE INSTALLATION

9



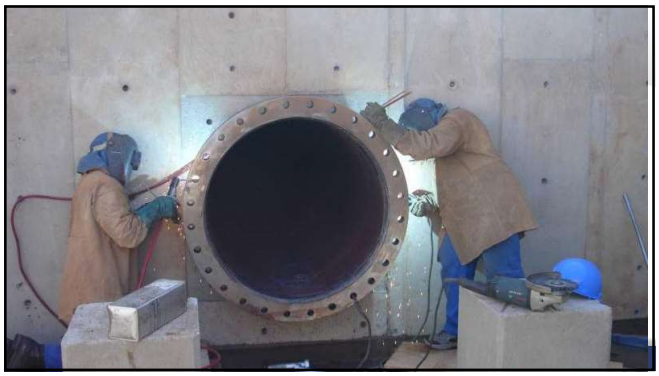

10

11

12

13

14



15

16

17

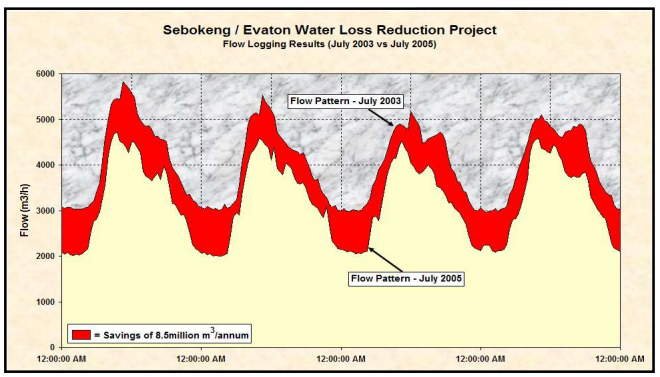
18


19

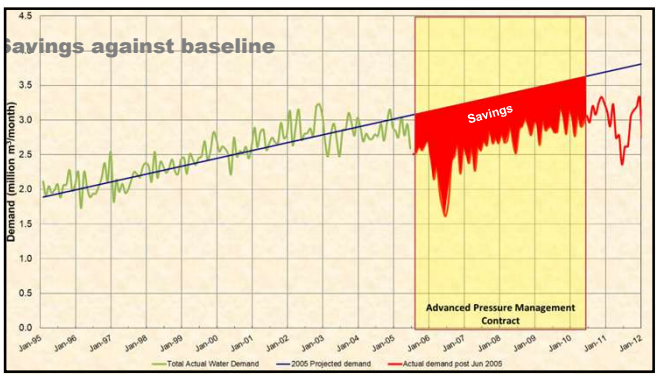

20


21


22




23




24

## Actual Savings for 60 Months (2005 to 2010)

| Year | Water Use | | Saving | | |
|---|---|---|---|---|---|
| | Expected | Actual | m3 | Rands | US$ |
| Months 1 to 6 | 18,721,000 | 14,614,000 | 4,107,000 | 11,499,600 | 1,691,118 |
| Months 7 to 12 | 18,751,000 | 12,785,930 | 5,965,070 | 16,702,196 | 2,456,205 |
| Months 13 to 18 | 19,403,000 | 13,886,451 | 5,516,549 | 16,218,654 | 2,316,951 |
| Months 19 to 24 | 19,423,000 | 13,877,370 | 5,545,630 | 16,304,152 | 2,329,165 |
| Mopnths 25 to 30 | 20,086,000 | 15,269,040 | 4,816,960 | 14,788,067 | 2,112,581 |
| Months 31 to 36 | 20,206,000 | 15,633,153 | 4,572,847 | 14,038,640 | 2,005,520 |
| Months 37 to 42 | 20,769,000 | 15,870,850 | 4,898,150 | 15,918,988 | 1,768,776 |
| Months 42 to 48 | 20,766,000 | 15,692,825 | 5,073,175 | 16,487,819 | 1,831,980 |
| Months 49 to 54 | 21,452,000 | 16,479,970 | 4,972,030 | 16,159,098 | 1,901,070 |
| Months 55 to 60 | 21,438,000 | 16,874,423 | 4,563,577 | 14,831,624 | 1,744,897 |
| Total Months 1 to 60 | 201,015,000 | 150,984,012 | 50,030,988 | 152,948,838 | 20,158,263 |

Exchange rate $1 = R7.6 Average Water Tariff = R3/m3)

25

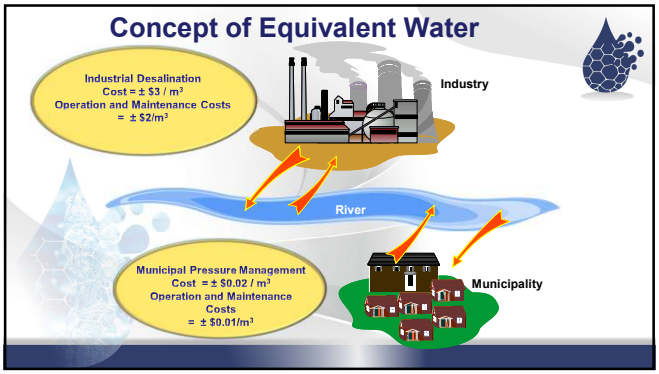
## Hourly: Savings = 1000 m³/hr

Olympic swimming pool every 2 hours

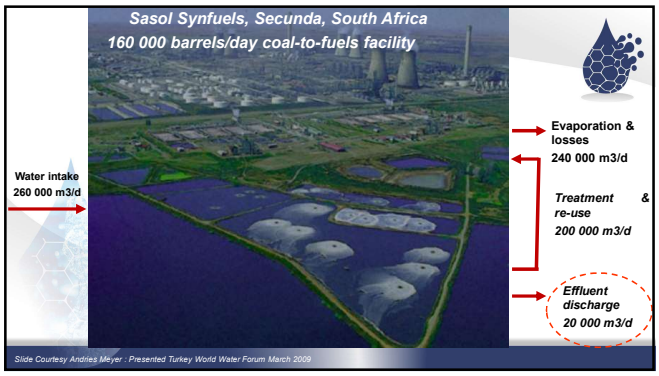
26


27

## Concept of Equivalent Water




28




29

## Pressure management system in Sebokeng/Evaton

*No leaks fixed, only pressure reduced during off-peak periods (same leaks - but lower volume)*

30


31

## Comparing Savings (2005 to 2010 prices)

| | Direct operations saving (Sasol initiative) | Catchment saving (Private initiative) |
|---|---|---|
| Water savings from Vaal River | 18 Mℓ/d | 28 Mℓ/d |
| Capital cost | R 500 mil | R 5 mil |
| Unit capital cost | R 28 mil/Mℓ (100%) | R 0.2 mil/Mℓ (0.6%) |
| Operating & Maintenance cost | R 20 / m3 (100%) | R 0.14 / m3 (0.7%) |

Slide Courtesy Andries Meyer : Presented Turkey World Water Forum March 2009

32

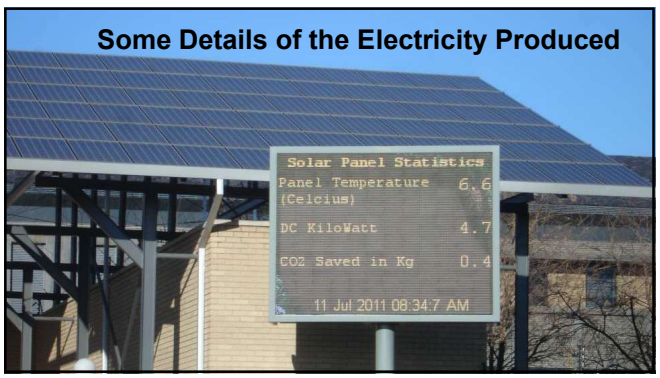
## Example calculation of CO2 savings

33

## Solar Panels Installed at an Embassy in Pretoria in 2011

34

## Some Details of the Electricity Produced

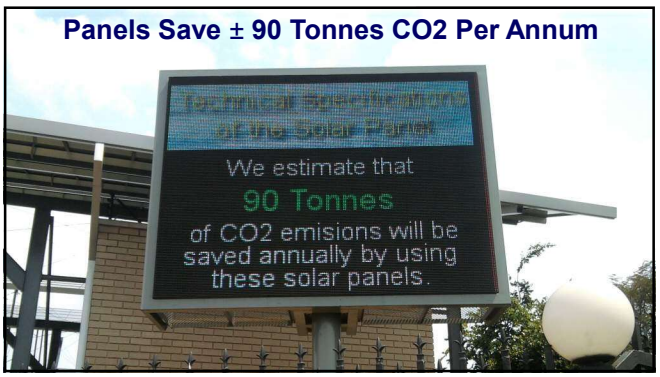



35

## Cost of the Panels ± R8 mil (± $1 mil in 2011)


36


37




38

## Energy Savings From Pressure Management Installation

- Water saved by Pressure Management installation has been pumped ± 450m
- Pumping energy can be estimated from flow rate, pumping efficiency and pumping head
- CO2 savings are based on figures provided by SASOL where 1 MWhr is equivalent to ± 1 Ton CO2
- Installation water savings of ± 10 million m3/annum
- Conservative CO2 savings of 13 000 tons/annum

39

## Pressure Management v Embassy Solar Panels

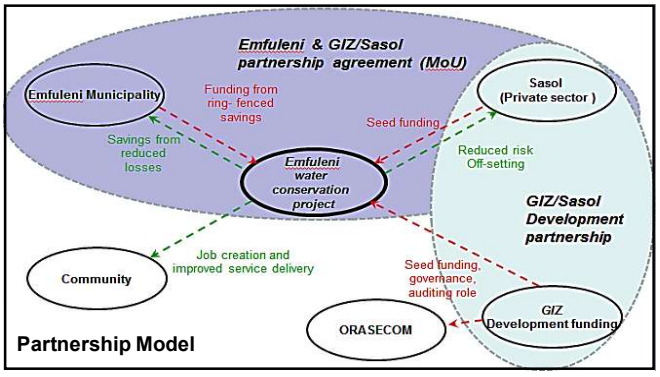
| Pressure Management | Solar Panels at Embassy |
|---|---|
| Capital Cost R5 mil ($650 k) | Capital Cost R8 mil ($1 mil) |
| Saves 13 000 tonnes CO2/yr | Saves 90 tonnes CO2/yr |
| Value of CO2 = R2.1 mil/a ($300 000) | Value of CO2 = R18 000 ($2 250) |
| Water savings R30 mil/a ($4 mil) | Electricity savings R300 000/a ($40 000) |
| Interest R500 000/a ($65 000) | Interest R800 000/a ($100 000) |
| Payback less than 3 months | Payback NEVER !! |

Note: The figures are for this specific River System and figures may vary from case to case

40

## PARTNERSHIP AND FUNDING MODEL

41




42

## COMMUNITY AWARENESS

43

## Door to Door Awareness

44

## Community Workshops

45


46

## Councillor Training

47


48


49


50

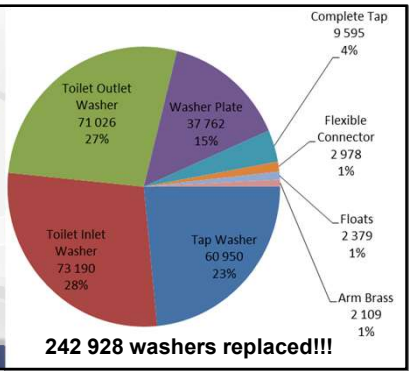

51


52


53


54

## Summary of Plumbing Materials



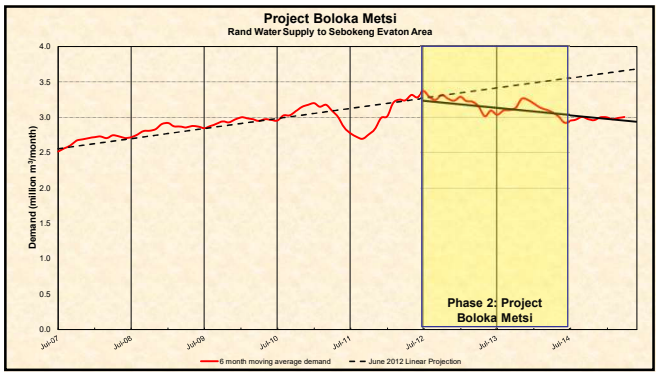

**242 928 washers replaced!!!**

55

## Phase 2: Technical Highlights

- >100 local jobs created
- Trained local contactors and plumbers
- Improved level of service
- Improved customer relations
- Deferred infrastructure upgrades

56




57

## Sebokeng Evaton: Phase 2 Savings

| Phase | Projected demand million m³ | Actual demand million m³ | Saving million m³ | Value $ | % Reduction |
|---|---|---|---|---|---|
| Phase 2a Jul '12 to Jun '13 | 40.012 | 37.935 | 2.076 | $1 million | 5.2% |
| Phase 2b Jul '13 to Jun '14 | 41.719 | 36.956 | 4.763 | $2.6 mil | 11.4% |
| Total Jul '12 to Jun '14 | 81.732 | 74.892 | 6.840 | $3.6 mil | 8.4% |

58

## Key Factors in Phase 2

- Base funding from SASOL and GiZ
- Reliable baseline against which savings measured
- 50% of budget used for soft/social issues
- 2 –year project
- Payback of around 1 year

59

## Comments and Conclusions on PPP's

60

## Issues to Consider when Implementing Non Revenue Water Public Private Partnerships 1

- Keep funding model simple and transparent
- Performance must be measured against a baseline
- Savings must be auditable and real
- Risks and rewards should be balanced
- Soft /social issues should be included in project if possible

61

## Issues to Consider when Implementing Non Revenue Water Public Private Partnerships 2

- Difficult to evaluate savings from social interventions
- Technical interventions require community support
- Is Baseline static or growing ?
- Do you need a check-meter ?
- What is the baseline period ?

62

## Issues to Consider when Implementing Non Revenue Water Public Private Partnerships 3

- Are repairs allowed during baseline establishment
- Legal contract should be clear and concise and simple if possible
- Clearly define what is included in “the Savings”
- Contract must allow for restrictions and/or intermittent supply
- Are payments on savings capped or open ended ?

63

## Issues to Consider when Implementing Non Revenue Water Public Private Partnerships 4

- Are savings reflected on water accounts ?
- Are savings available to fund project invoices ?
- All new equipment must be clearly documented for Client Assets
- What is the appropriate term of the contract ?
- What is the appropriate share of the savings ?

64

## Issues to Consider when Implementing Non Revenue Water Public Private Partnerships 5

- What penalties are included in the contract ?
- How are the savings audited ?
- How are floods, droughts and extra-ordinary events covered ?
- What about institutional memory of Client ?
- How are delays in payment addressed in contract ?

65

## Issues to Consider when Implementing Non Revenue Water Public Private Partnerships 6

- What is the cost of the water and what is included ?
- Is Client Municipality of Private Entity ?
- How do you deal with unmetered connections ?
- How do you deal with WSP changing out meters ?
- How do you deal with deliberate delays in baseline approval

66

## Issues to Consider when Implementing Non Revenue Water Public Private Partnerships 7

- Can Client change depots/factories after project has started ?
- Can client extend baseline period after project has started ?
- Can Client insist in addressing uneconomical sites?
- Important to have independent auditor for conflict resolution
- Interest should be applied on all late payments

67

## Final Thought


Photographs Courtesy of "Urban Green File" Vol 11 No 3.
Brook Pattrick Publications

68

## THANK YOU

ronniem@sarox.net

69