Water Demand Management Case Study: Overstrand Municipality

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22 August 2013

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Presentation Outline:

- Background: Overstrand Municipality
- Overstrand WDM Strategy
- Pipe Replacement
- Pressure Management
- Water Meter Replacement
- Leak Repairs & Flow Limiters
- Bulk & Zone Metering
- Tariffs
- Public Awareness
- Results to Date
- Acknowledgements

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Background

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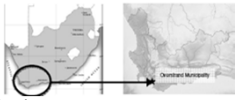
Background: Overstrand Municipality

- Overstrand Population / Demographics:
  - 84 000 permanent residents; Hermanus 44 000 residents
  - 26 500 developed erven; 10 100 vacant erven
  - 11 Towns and Villages
  - Tourism and Agriculture = main economic drivers
- Overstrand Water Sources:
  - 6 Dams
  - 16 Boreholes
  - 3 Rivers & 3 Springs
  - Future: waste water re-use & desalination
- Overstrand Water Infrastructure:
  - 8 Water Schemes
  - 780 km Bulk and main pipelines
  - 43 Reservoirs
  - Total Demand 7 219 Mℓ/y = 19.8 Mℓ/day
  - Water Losses 25.8%



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Background: Overstrand Municipality

Overstrand WDM Strategy:

- Aim is to reduce water losses by 50% between 2010 and 2015
  - Water Pipe Replacement
  - Pressure Management
  - Replacement of Consumer Water Meters
  - Domestic Leak Repairs at Indigent Households
  - Water Management Devices at Indigent Households
  - Enhance Public Awareness on Water Issues
  - Water and Sewerage Tariffs
  - Focused Leak Detection and Repair
  - Water Balance per Zone
  - Maximum Use of Treated Effluent

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Water Pipe Replacement

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- Water Pipe Replacement:
  - Started in 2007 with water pipe replacement
  - Replaced about 56 km of pipelines to date (7.2%)
  - Budget over past 6 years - R 40m
  - Budget for next 3 years - R 32m
  - Started in areas with highest water losses, oldest reticulation, most frequent bursts, highest risks
  - HDPE pipes (pipe cracking, less joints, less disturbance)
  - More valves, fire hydrants and air valves installed

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Pressure Management

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- Pressure management:
  - Started in 2012 with pressure management implementation
  - Phase 1: Kleinmond and Stanford completed
  - Critical point pressure reduced from 45m to 25m;
  - Pressure management capital budget = R 1m;
  - Phase 2: Implement pressure management in Betties Bay during 2013/14

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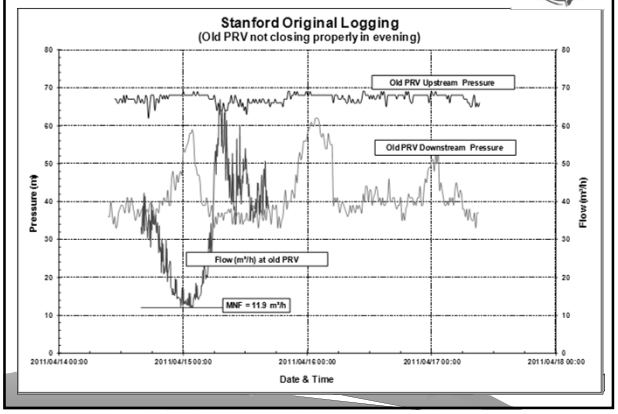
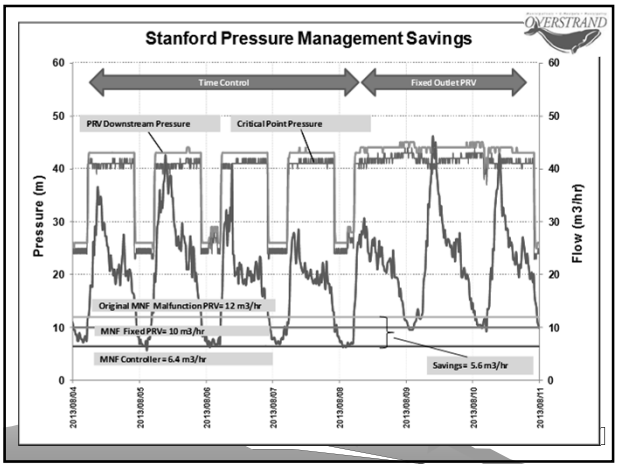
Stanford Original Logging (PRV Malfunction)





Stanford Savings

- MNF reduced by 2 m3/hr with fixed PRV;
- Additional 3.6 m3/hr MNF reduction with controller;
- Total Savings = 23 800m3/a
- @R9.70/kl = R230 000/a

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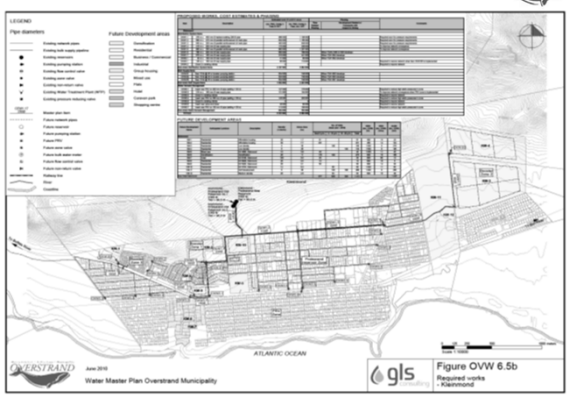
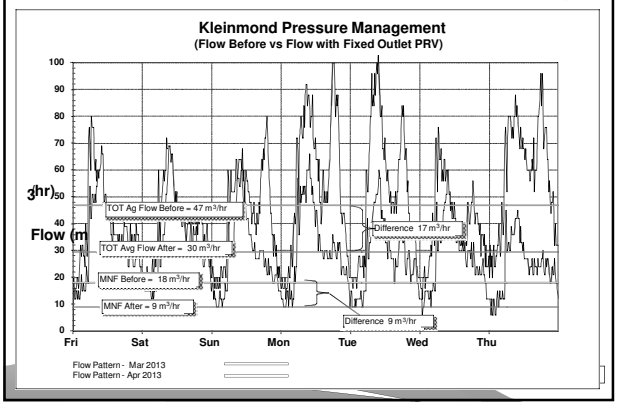
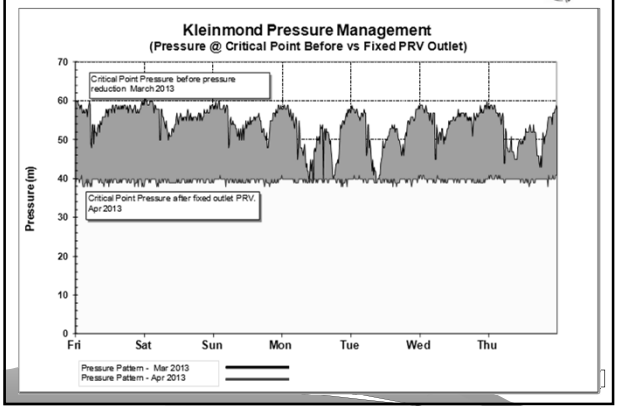
Kleinmond Pressure Management



Kleinmond Pressure Management: Flows



Kleinmond Pressure Management: Pressure



Kleinmond Savings

- MNF Reduced with 9 m3/hr (65 700m3/a) @R14/kl = R900 000/a

- Pipe Bursts Reduced from avg of 6 per week to 1 per week. @ R3 000/pipe burst = R780 000/a

- Controller currently being commissioned - will result in additional savings.

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Water Meter Replacement

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- Consumer Water Meter Replacement:
  - Completed water meter audit during 2011
  - Started in 2011 with consumer meter replacements
  - Replaced meters older than 10 years
  - Replaced 3 900 meters from 2011
  - Use plastic meters because of copper theft
  - Meter replacement budget - R 3m/a
  - New 3 year water meter replacement contract awarded

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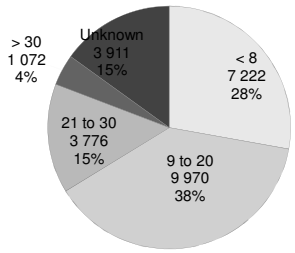
Water Meter Audit:

Overstrand Municipality
Age of water meters 2011



3 900 meters replaced by July 2013

15 tested:
3 within spec
12: 4% - 10% slow

Leak Repairs at Indigent Households

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- Leak Repairs at Indigent Households:
  - Started in 2011 with leak repairs
  - Repaired leaks at 1500 indigent properties to date
  - Started in Zwelihle / Hermanus
  - Budget - R 1m/a
  - New 3 year leak repair / meter replacement / water management device contract awarded

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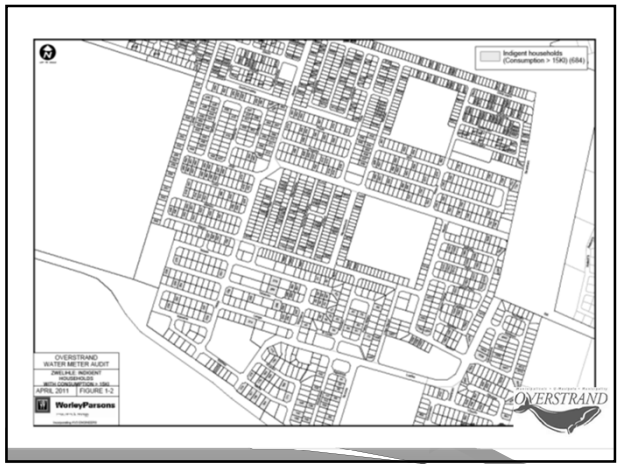

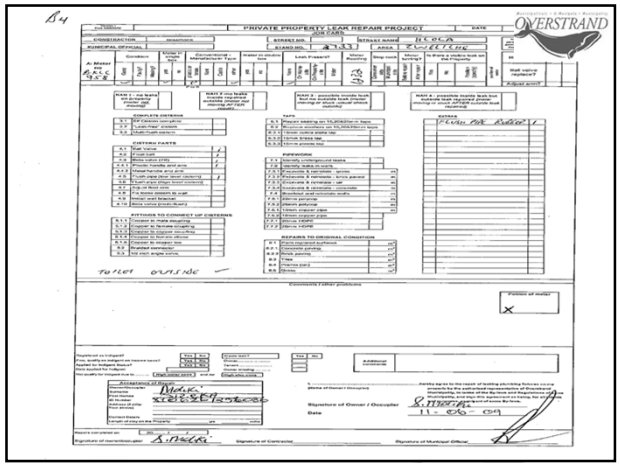

Water Management Devices

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- Water Management Devices:
  - Started in 2011 with the installation of water management devices at indigent households
  - Restrict households to 600 liters/day or 18 kl/month to stay registered as indigent
  - Installed 1015 water management devices to date
  - Project done in phases
  - Water management device budget - R 1m
  - Planning to install 500+ more water management devices during 2013/14 financial year

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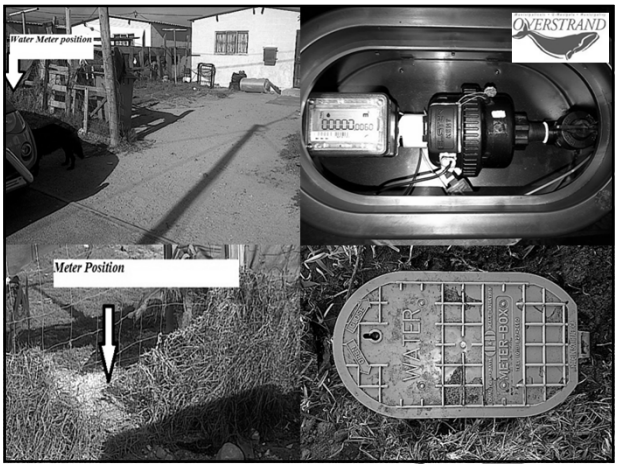

Bulk and Zone Metering

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- Bulk and Zone Metering:
  - Improve efficiency of bulk and zone metering in all areas;
  - Water supply area divided into pressure (reservoir) zones;
  - Bulk meters installed or repaired at reservoirs;
  - Reservoir meters connected to telemetry system to record usage;
  - Properties linked to reservoir zones on financial data base;
  - Manage water balance in smaller areas;
  - Pick up leaks or abnormal high usage easier

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Tariffs as WDM Tool

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- Water Tariffs:
  - Rising block tariff (6 blocks)
  - 6 kℓ/m free only to indigent households
  - Cost of water covered for average consumption
  - Higher blocks discouraging excessive usage
- Sewerage Tariffs
  - Based on 70% of water consumption
  - Maximum 35kl/m (=50kl water consumed)

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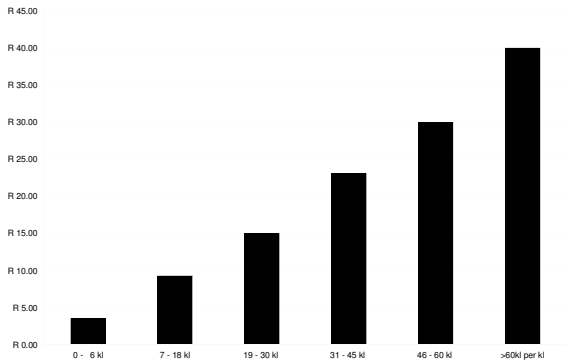
Water Tariffs



Public Awareness on Water

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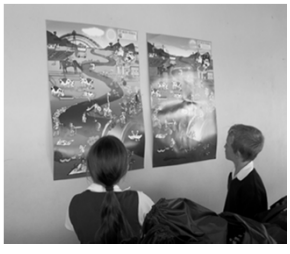
Public Awareness on Water



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Public Awareness on Water

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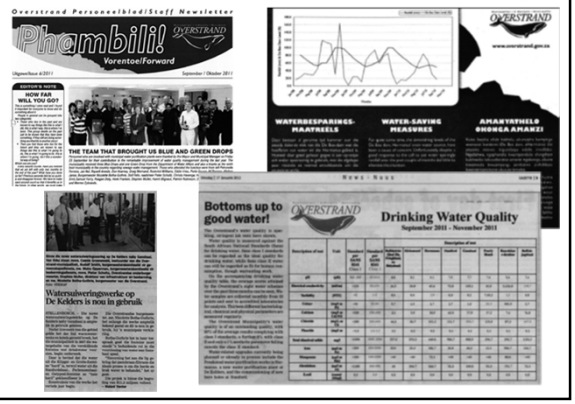

Overstrand Personeelblad/Staff Newsletter

Phambili! Vorentoe/Forward

THE TEAM THAT BROUGHT US BLUE AND GREEN DROPS

Watersuiweringswerke op De Kelders is nou in gebruik

Bottoms up to good water!

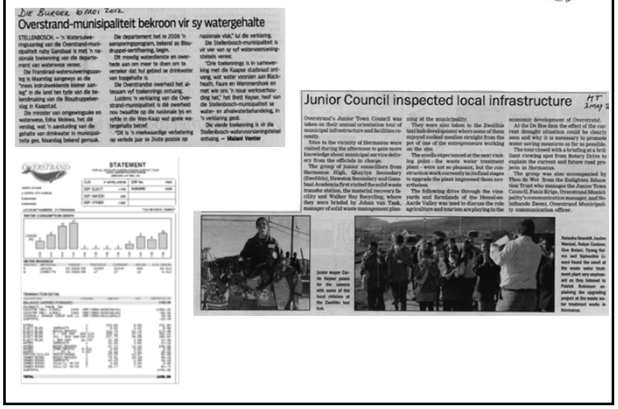
Drinking Water Quality September 2011 - November 2011

WATERBESPARINGS-MAATREELS

WATER-SAVING MEASURES

AMANYATHELO OHONGA AMANZI

Public Awareness on Water


Overstrand-munisipaliteit bekroon vir sy watergehalte

Junior Council inspected local infrastructure

STATEMENT

Public Awareness on Water


Hoe maak 'n mens waterslim tuin?

Waar begin ek?

Wat kan ek doen?

Plante geskik vir Waterslim tuine

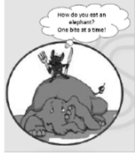
Water-Wise Gardening in the Overstrand

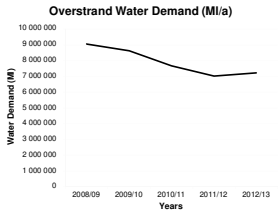
Waterbesparing in die Overstrand deur reënwater te oes

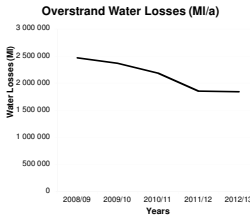
Results to Date

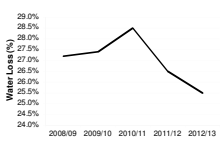
Results

- Pipe failures reduced from average 41/month to 25/month
- Water Demand decreased from 9 054 Mℓ in 2008/09 to 7 219 Mℓ in 2012/13 (-20.3%)
- Water Losses decreased from 2 467 Mℓ in 2008/09 to 1 842 Mℓ in 2012/13 (-25.3%)
- Water Loss % reduced from 28.5% in 2010/11 to 25.5% in 2012/13 (-10.5%)









Way Forward

- Additional Pressure Management
- Continuous Pipe Replacement
- Continuous Water Meter Replacement and Indigent Leak Repairs
- Zone Water Balancing
- Monitoring of ILI's per Zone
- Focused Mains Leak Detection and Repairs
- Continuous Co-operation with Finance

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Acknowledgements

- Overstrand Operational, Engineering and Finance Departments
- Consulting Engineers GLS, Worley Parsons, WRP, and Lyners

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Thank You

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