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Retrofit and Leaks Repair Projects




**Water Demand Management & Strategy
Water and Sanitation**
Presented By: Xola Myekwa Date: 21/08/2013


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Contents

- Introduction, objectives and background of the project
- Project initiation and plan
- Pilot projects
- Conclusion on the value of the project


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Introduction

- These are the type of project that:
 - Perceived as "NON CHALLENGING", because are less technical
 - Political involvement
 - Public by-in and engagement
 - Dealing with social and socio-economic issues



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Main Objectives

- Retrofit and Leaks Repair Projects ensure that water consumption at properties are within accepted norms
- Ensure water and sewerage monthly bill for these properties is affordable to the owners in future.
- As the project will also deal with high arrears that have resulted from historical water leaks.


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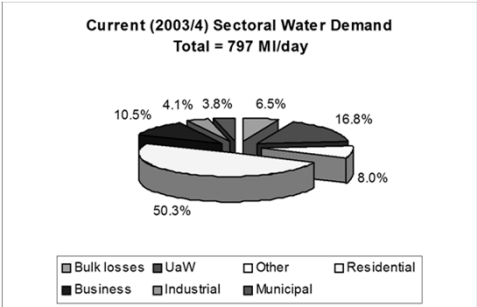
Typical low income households




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Base water demand pattern

**Current (2003/4) Sectoral Water Demand
Total = 797 MI/day**



Sector	Percentage
Residential	50.3%
Business	16.8%
Industrial	8.0%
Municipal	6.5%
Other	4.1%
UaW	3.8%
Bulk losses	10.5%

Indicators for selecting areas for projects



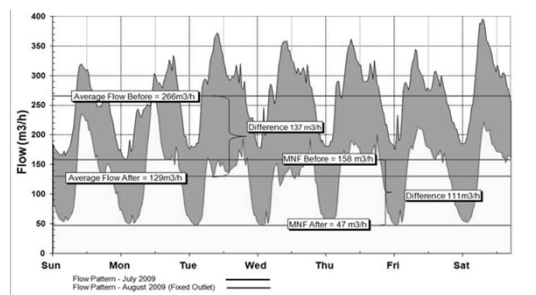
- Minimum night flows (MNF)
- High water consumptions (ideally 11Kl/month)
- High bills due to high levels of non-payments

Minimum night flows (MNF)



- MNF is made up of reticulation losses and household leaking plumbing.
- In a residential area where there is no industrial water usage it can be assumed that most of the MNF recorded from data logging is water wastage made up of the following:
 - Leaks in the reticulation systems
 - Leaks within the households/properties (i.e. plumbing leaks)
 - Indiscriminate wastage of water (i.e. people leaving taps open)

Typical MNF graph



Bulk water balance



System Volume Input	Authorised Consumption 765.75 Ml/day	Billed Authorised Consumption 719.18 Ml/day	Billed metered consumption 719.18 Ml/day	Revenue Water 719.18 Ml/day (79.5% of Input Volume)	
		Unbilled Authorised Consumption 46.57 Ml/day	Billed unmetered consumption 0 Ml/day		
	Water Losses 138.48 Ml/day (15.3% of Input Volume)	Apparent Losses 57.57 Ml/day	Unbilled Metered Consumption 37.08 Ml/day	Unbilled Unmetered Consumption 9.49 Ml/day	Non-Revenue Water 185.04 Ml/day (20.5% of Input Volume)
		Real Losses 80.91 Ml/day	Unauthorised Consumption 9.04 Ml/day	Customer Meter Inaccuracies 48.52 Ml/day	
		Leakage on Transmission and Distribution Mains 80.03 Ml/day	Leakage on Overflows at Storage Tanks 0.88 Ml/day		
		Leakage on Service Connections up to point of customer meter Negligible			

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Blocks affected by retrofit projects



- Billed unmetered consumption
- Unbilled Metered Consumption
- Unbilled Unmetered Consumption
- Customer Meter Inaccuracies

Project initiation



- Analysis of household consumption patterns of different areas
- Identification of consumers with high debt and consumption volume
- Create the project plan with all activities.

Elements of the integrated leak repair projects



- Social interventions:
 - Education and awareness
- Technical interventions :
 - The installation or repair of meters
 - The repair of plumbing leaks
 - Retro fitting of toilets, taps and showers
 - Installation of tagged standpipes
- Quality checks and monitoring of consumptions
- Handing over to Operations

Social intervention (education and awareness)



- Identification of stakeholders (city officials and community)
- Community engagement (leadership structures and field workers)
- Training of field workers
- Educate community about better water saving options which can include the acceptance of the water management device
- Record each household leak defects in a job card by means of enquiries and observation
- Compile the list of all the defects for plumbers

Identification of stakeholders



Community engagement



Training of field workers



Field worker recording leak defects

Technical interventions

- Fixing of the leaks and installation of the device
- Setting of the device and the installation of the UIUs (user interface unit)
- Installation of tagged stand pipes and distribution of tags (200l/day)
- After distribution of tags for stand pipes, field workers record standpipe consumptions for us to understand consumption pattern

Fixing of leaks and installation of Water Management Device (WMD)


Setting of the Water Management Device (WMD) and User Interface Unit (UIU)

Installation of tagged standpipes

Quality checks and monitoring of consumptions

- Select a sample of households and verify quality of plumbing and education done
- Site walk down to check all standpipes installed
- Comparing consumption before, during and after implementation

Quality checks on plumbing and education done



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Quality checks on all standpipes installed



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Handing over to Operations department

- Forward latest meter data info to finance for billing
- Issue nearest municipal building with tags to accommodate for lost tags by backyarders
- Facilitate infrastructure handover to depots/operations
- Support depots in the initial operation stages of the infrastructure

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Pilot projects

- Summary spreadsheet for Samora Machel, Fisantekraal and Ravensmead
- Graphical presentation of before, during and after consumptions for pilot projects
- Challenges and lessons learnt

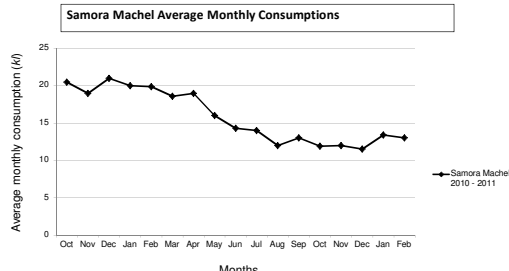
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Pilot projects

Discription	Samora Machel	Fisantekraal	Ravensmead
Number of households	500	1233	1423
Average consumption before intervention (kl)	21	29	31
Average consumption after intervention (kl)	12	17	21
Difference (kl)	9	12	10
Total Annual Consumption (kl)	4500	14796	14230
Cost of the project (R)	R 1 100 000.00	R 3 700 000.00	R 4 200 000.00
Annual Average Savings (R)	R 54 000.00	R 177 552.00	R 170 760.00
Payback Period (years)	1.7	1.7	2.0
Water Terrif per kilolitre	R 12.00		

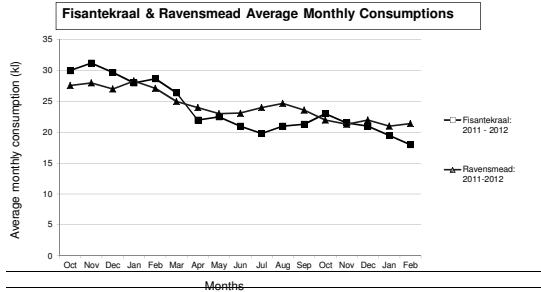
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Samora Machel consumption data



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Fisantekraal and Ravensmead consumption data



Challenges and lessons learnt



- Inferior plumbing installations and plumbing leaks
- Some houses did not belong to the community and were rented from the municipality. No sense of ownership
- Consumer not understanding their role as a homeowner to honour payment of municipal services (including the supply of water)
- Consumer metering and billing is almost non-existent
- Very high level of inefficient water usage (informal cars washes, irrigating or dust control, washing clothes under running tap etc.)

Challenges and lessons learnt cont.'s



- Backyard dwellers (Renting or extended family in the property)
- Vandalism to the city's water reticulation infrastructure
- Re-occurring leaks, which can be prolonged by dropping the pressure if the area was pressure managed before intervention
- Other challenges may differ from City to City

Conclusion



- Value on water education and awareness
- Value on transferring the ownership / responsibility of the infrastructure to the community
- Value on relief pressure and call outs / standby on the operation departments
- Value on portable water savings
- Value on service delivery

Thank you!

