

# Non-Revenue Water Reduction Strategy

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07 April 2012





## Definition of NRW

Water produced but not paid for

- Technical losses (leakage)
- Not billed water.
- Illegal connections
- Poor meter performance & Inaccurate meter reading
- Poor accounting of metered flows.



## Impact

- Loss of scarce resources and financial revenue in a cash strapped water sector
- Current estimates:
  - 38% of total supply or
  - 285 litres/property/day
  - We don't really know at national level
- Reduction of NRW from 38% to 35% represent an increased revenue of \$40 million over ten years



# National Policy

- Ensure that optimal use of water resources is a priority, including the allocation of public funds by encouraging efficient performance.”
- “Encourage water service providers to reduce the quantity of non-revenue water to increase the availability of scarce sources to customers, increase their operational efficiency to progressively meet national targets.”
- PWA aspires to greatly reduce current levels of NRW by 2020



# Two Part Strategy

Strategy is divided into two parts:

- Part 1: Investigating & Assessing Water Losses (locate & quantify losses by type and set targets)
- Part 2: Planning & Implementing the Strategy – (Reduce NRW easiest to hardest – cheapest to expensive)

Why? NRW reduction is expensive – need to tackle cost effectively



# Organisational Requirements

- Dedicated PWA teams to manage strategy; including: funding approval & allocation, monitoring, regulation and liaison with service providers – *Exist*
- National NRW forum including PWA, service providers & Ministries– *Exists within the Union of Service Providers – needs extending*
- Dedicated NRW practitioner teams for larger service providers – *Exists for some providers*
- Dedicated national NRW practitioner team – work with and train smaller service – *Does not exist*



## Part 1 – Enabling Works

- PWA NRW team - standard reporting format
- Service Providers - prepare cost works plans for metering requirements (bulk & customer), zoning requirements (valves & network configuration) submit to the PWA.
- National NRW team help with smaller service providers to prepare enabling works plans
- PWA NRW team collate, analyse & approve plans, request & prioritise funding allocation
- Service providers prepare procurement documents, tender & implement enabling works



## Part 1 - Level 1 Audit & Benchmark

- PWA NRW team - standard reporting format
- Service Providers – audit mass balance & metered sales v's bills paid- prepare reports & submit to PWA
- National NRW team – help smaller service providers to carry out audit & prepare report
- PWA NRW team - collate, analyse, prepare national level report, set outline targets
- PWA NRW team prepare prioritised plan for further investigations





# Part 1 – Targeted Investigations

- Detailed investigations expensive – Prioritised by areas with biggest losses

Investigations in two parts:

- Accounting/Non payment
  - Straight after level 1 audit- little cost compared to investigating technical losses & illegal
- Illegal & Technical losses
  - Night time reservoir “drop testing”
  - Minimum night flows, logging of diurnal flow patterns, assess ratio of technical to other losses.
  - Differentiating illegal & technical difficult.



# Part 1 – Targeted Investigations

## Actions:

- PWA NRW - standard reporting format
- Service Providers - prepare cost detailed investigation plans, submit to PWA
- National NRW team - help small service providers
- PWA approve plans, allocate funding
- Service Providers investigate & prepare reports
- PWA NRW collate, analyse, national report & targets
- PWA NRW, prioritised plan for NRW reduction program and interventions



## Part 2 – Interventions

### Good Management Practice – Fundamental

- Asset management & operational planning
  - Maintenance plans
  - Emergency maintenance plans
  - Network management, minimize pressure
  - Asset rehabilitation & capital replacement plans
- Information management, correlation and analysis
  - On-going water audits (included above)
  - Asset records, age, material etc
  - Asset maintenance records
  - Burst records and repair times
  - Records of available spare parts
  - Records of customer complaints



## Part 2 – Interventions

### Accounting & non-payment

- Accounting/meter reading errors
  - simple systems for QA on methodology & processes of water accounting, checks on meters read.
- Non-Payment – No unique solution
  - Incentives for improved collection.
  - Payment plan for customers in arrears
  - Phone calls to customers who have not paid
  - Visit customers' properties to ask for payment
  - Pre-paid water meters for non-payers
  - Surveys to find out reasons for non payment
  - Publicity campaign to stress importance
  - Fine customers who consistently don't pay



## Part 2 – Interventions

### Illegal Connections

- Analysis of Water Use
  - Use metered records to locate. e.g. properties with no record of connection & those with consistent low use of water compared to others.
- Physical investigations
  - Visit properties with no record of connection, or with consistent low use to investigate
  - Rural areas -physically travel along the mains & investigate where customers get their supply.



## Part 2 – Interventions

### Technical Losses

- Strategy does not describe detailed technology & physical methodology to reduce technical losses
- This should be assessed as training requirement
- Strategy is to provide specialist NRW practitioner team to help with this.
- NRW forums to transfer best practice
- Plans need to target areas with highest leakage and easiest solutions
- Encourage public to report leaks



## Part 2 – Interventions

### Actions

- PWA & Union of Service Providers work together to develop & share good management practices
- PWA NRW team prepare standard report format for progress on NRW reduction
- National NRW team, PWA NRW team & Union of service providers develop best practice manual, assess training & budget requirements to implement training
- Service providers implement NRW reduction plans & report progress to PWA NRW team
- PWA NRW team collate national data, report progress & adjust targets



# Maintain & Improve Strategy

## NRW doesn't go away

- Customer meter strategy, type, replacement plan
- Regular checking of bulk meter accuracy
- Active leakage control, regular surveys/monitoring
- Ongoing replacement of old and leaking pipes
- Checking for illegal customers
- Revise tariff structure to address high water use
- Regular meetings of the NRW forum
- Continue training & improved detection techniques
- Continued public education to the value of water





## Next Steps:

- Set up PWA NRW team ( **Done**)
- Priority training needs of PWA NRW Team (**Done**)  
This completed & forwarded to the PWA training department as 2013 priority training needs.
- Agreement of Pilot scheme area (**Done**)  
Salfeet Municipality has been agreed as the project area to trial the implementation of the PWAs NRW Strategy completed.
- Initial contact and ongoing liaison with service providers (**Done**)  
The PWA NRW team have had productive meetings with the JWU and Salfeet municipality



## Next Steps:

### Investigate & Assess Water Losses – Enabling Works

- Prepare standard reporting & monitoring formats for initial data requirements **(Done)**
- Prepare standard reporting for initial Cost requirements to Salfeet Municipality **(Done)**
- Prepare plans enabling works, indicating metering requirements (bulk and customer), zoning requirements (valves & network configuration) including costs and submit for funding. **(In process)**



## Next Steps:

### **The following tasks are not yet started:**

- Meet Donors and ask about their potential for funding the pilot scheme
- Collate, analyse and approve plan and request funding for the enabling works.
- Apply for funding and prioritise allocation of funding. Prepare procurement documents, tender and implement enabling works.

### **Part 1b: Investigate & Assess Water Losses**

Not Yet Started

### **Part 2: Planning and Implementing the pilot project**

Not yet started



# Thanks

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