

# SUMMARY SHEET FOR LEAKAGE BENCHMARKING IN SOUTH AFRICA

**Upington**

## S1. SYSTEM NAME AND CONTACT DETAILS

Name of Water Undertaking	Kharahais Municipality		
Name of Water Supply System	Upington Waterworks and Reticulation Network		
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## S2. Performance Indicators of Water Loss

Viewpoint	Level	Parameter	Typical Range			Actual PI	Units
			Excellent	Good	Poor		
Operations management of distribution system at current pressure	Basic	% of year system is pressurised	100	100	<100	100	%
		Current Annual Real Losses (CARL) <small>(when system is pressurised - see note 2)</small>	30 to 100	100 to 200	>200	248	Litres/connection/day
	Detailed	Unavoidable Annual Real Losses (UARL) <small>(see note 3)</small>	n/a	n/a	n/a	29	Litres/connection/day
		Consumption	n/a	n/a	n/a	2735	Litres/connection/day
		Infrastructure Leakage Index (ILI) <small>(= CARL/UARL - see note 4)</small>	1	2	>3.0	8.6	non dimensional
Financial management aspects of water losses	Basic	Volume of non-revenue water as a% of system input volume <small>(see note 5)</small>	<10%	20%	30%	14	%
	Detailed	Value of non-revenue water as a % of annual cost of running the system <small>(see note 6)</small>	<5%	10%	15%	13	%

### Notes:

- Note 1: taken from data in "AQUA" article, December 1999 or estimated by WRP  
 Note 2: takes account of % of time system is pressurised, but not system pressure, density of connections or customer meter location  
 Note 3: takes account of density of connections and customer meter location at current pressure  
 Note 4: measures overall efficiency of management of distribution system at current operating pressure  
 Note 5: strongly influenced by average consumption per service connection  
 Note 6: Allows different values of Rand/m<sup>3</sup> for different components of non-revenue water

## S3. Key Operating Parameters which influence Unavoidable Annual Real Losses (UARL)

Variable	Typical Range			Actual PI	Units
	Low	Medium	High		
Average Operating Pressure	30	45	100	25	Metres
Density of connections	20	45	120	51	per km of mains

## 4. Key Components of Annual System Input Volume

Component	m <sup>3</sup> /year	m <sup>3</sup> /connection/day	% of System Input Volume
Water Exported	454	not applicable	0.0
Authorised Consumption excluding exports	12080000	2.64	86.5
Apparent Losses	284688	0.06	2.0
Actual Consumption excluding exports	12364688	2.70	88.6
Real Losses	1138752	0.25 <small>(see note 7)</small>	8.2 <small>(see note 8)</small>
System Input Volume	13957440	3.05	100.0

Please return the completed form to R Mckenzie or J Kock at WRP Pretoria, tel: (012) 346 3496  
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