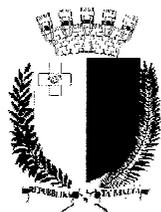

Performance Audit
Water Loss Control Management
by the
Water Services Corporation



N A O

National Audit Office

MALTA

October 2009

Water – a scarce resource in a small Mediterranean Island

- Water is a scarce resource and is under intense pressures from competing users.
- Immediate supply constraints have been addressed through significant investment in Reverse Osmosis plants – but environmental externalities result.
- Around 41 percent of water available for distribution remains unbilled (real losses - 23 percent, apparent losses - 18 percent) .

Audit Objectives and Methodology

Audit Objectives

This audit focused on the WSC's management regarding real and apparent losses. The main objectives of this exercise included the determination of:

- the adequacy of the WSC's initiatives to detect, monitor and record water leakage; and
- the adequacy of the WSC's management of leakage control.

Methodology

In order to attain the above objectives, the NAO:

- reviewed WSC documentation, namely, water leakage policies and plans;
- analysed the WSC's databases relating to water leakage management, customer service and billing systems; and
- conducted interviews with key WSC personnel.

Real and Apparent Losses

Real Losses

- relate to the physical losses of water from the distribution system, including leakage and storage overflows.
- inflate the water utility's production costs and stress water resources since they represent water that is produced, extracted and treated, which however never reaches beneficial use.
- cannot be completely eliminated. The lowest technically achievable annual volume of real losses for well-maintained and well-managed systems is known as Unavoidable Annual Real Losses (UARL).

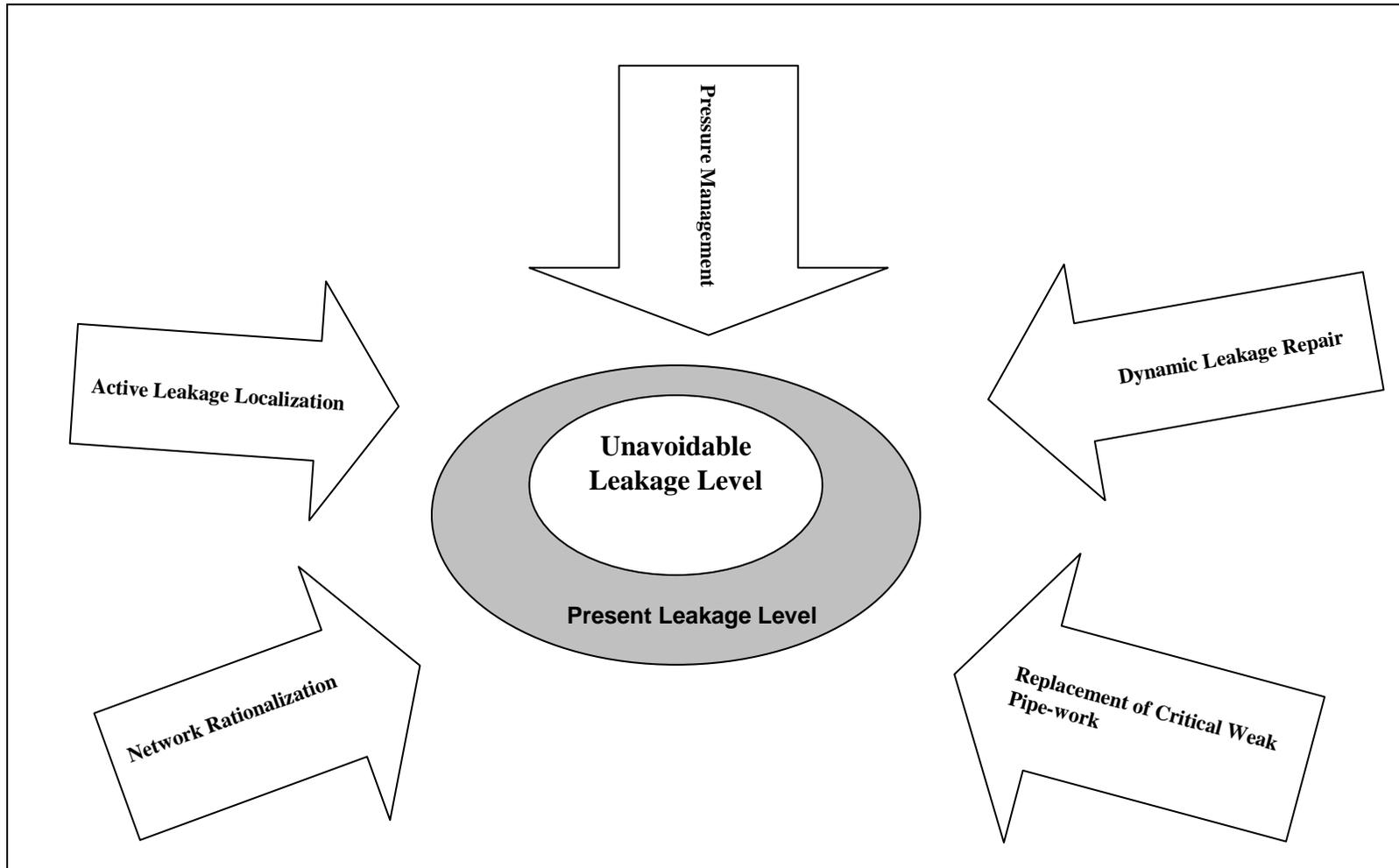
Apparent Losses

- occur in the Corporation's operations due to customer meter inaccuracies, billing system data errors and unauthorised consumption.
- cost utilities revenue and distort data on customer consumption patterns.

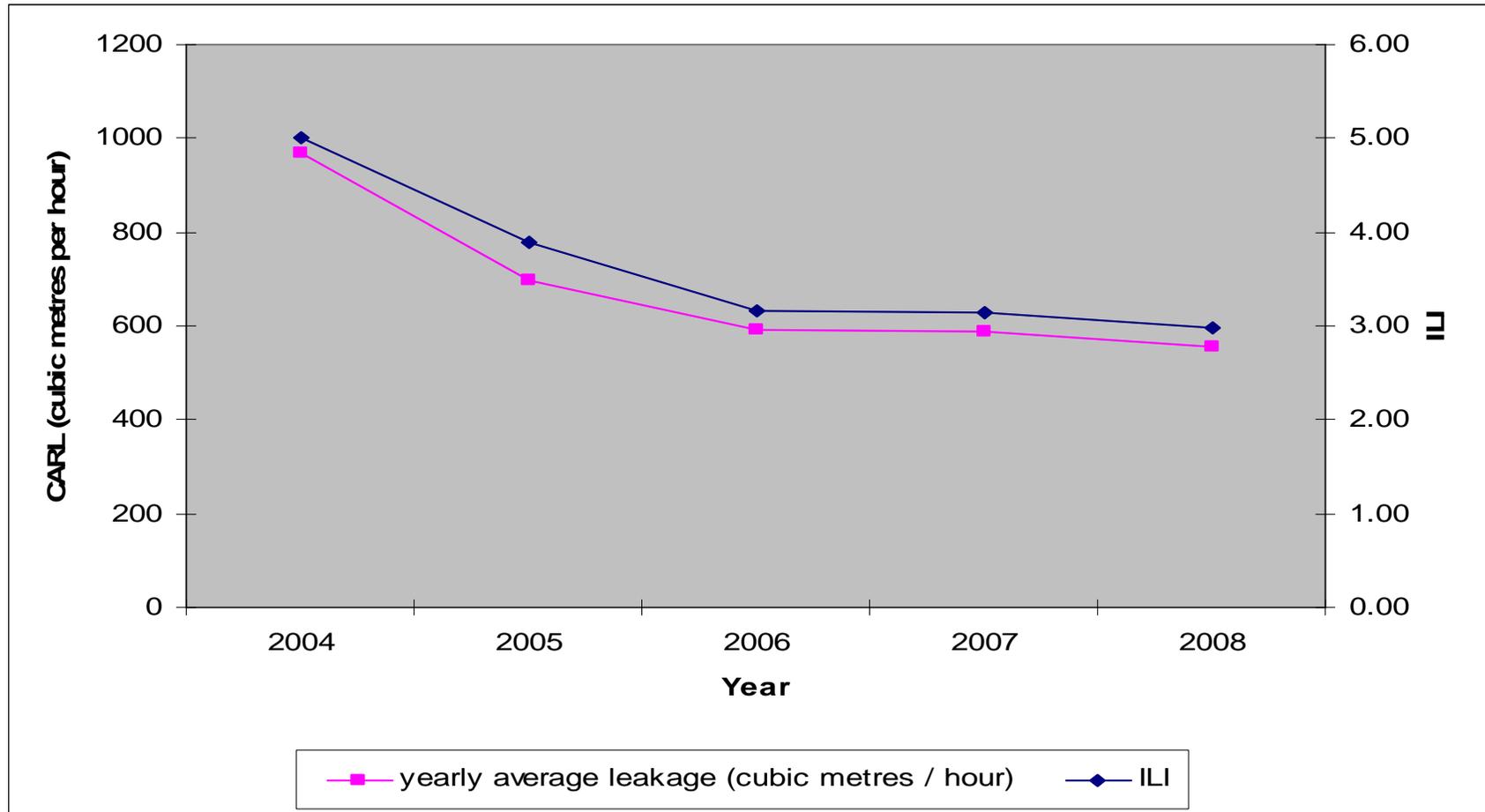
Audit Focus - The Water Balance

System Input Volume	Authorised Consumption	Billed Authorised Consumption	Billed Metered Consumption (including water exported)	Revenue Water
			Billed Un-metered Consumption	
		Unbilled Authorised Consumption	Unbilled Metered Consumption	Non-Revenue Water (NRW)
			Unbilled Un-metered Consumption	
	Water Losses	Apparent Losses	Unauthorised Consumption	
			Customer Metering Inaccuracies	
			Data Handling Errors	
		Real Losses	Leakage on Transmission and Distribution Mains	
			Leakage and Overflows at Utility's Storage Tanks	
			Leakage on Service Connections up to point of Customer metering	

Tackling Real Losses



Striving to attain Infrastructure Leakage Index targets



Significant Progress in minimising Real Losses

- The WSC is striving to attain its ILI targets within the zones by 2010.
- The WSC aims to attain an ILI of 2.0 by 2009 within zones
- The WSC adopted the 'five forces national strategy' to substantially reduce real losses.
- Further reduction necessitates significant investment and the application of an economic leakage intervention model.

Dealing with Apparent Losses

- The WSC is increasingly focusing more initiatives to deal with Apparent Losses.
- Indirect Plumbing Systems are a significant contributor to meter under-registration.
- The use of technology has drastically reduced billing system data errors.

Dealing with Apparent Losses (cont...)

- Improvements in the estimation procedures of unread meters has decreased apparent losses.
- Over three percent of accounts have not been read for over 3.5 years.
- More could be done to tackle water theft.
- Illegal Extraction of ground water.

Conclusions

- WSC's initiatives over the years have led to significant reductions in water losses.
- Despite progress registered, water losses still amount to 41 per cent of the system input volume.
- Further improvements regarding real losses through: maintaining up to date management information, fine tuning ILI calculations and introducing an economic leakage intervention model.
- The WSC needs to do significantly more to control apparent losses.
- With regards to apparent losses, the appropriate strategy needs to be in place, lines of responsibility clearly defined, increased cooperation between the various operational Units, a more proactive approach regarding water theft and fine tuning in the calculation of apparent losses.

Lessons Learnt by the Audit Team

- Scope of the audit was too broad.
- Limited work on the financial and environmental costs of minimising water losses.
- Limited data available to enable robust analysis on economic leakage intervention.
- Limited 'Water' expertise within the NAO.

**The performance audit report
Water Loss Control Management
by the
Water Services Corporation
is available online at
www.nao.gov.mt**

Thank You
