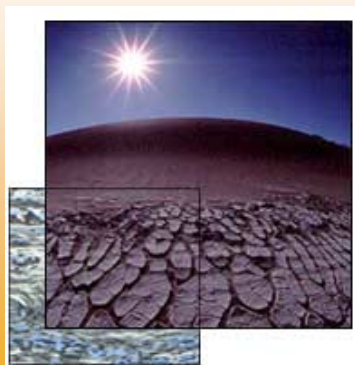


# Loss Management & Leakage Detection

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Gov't Architect's Office  
NSW Department  
of Commerce

formerly  
Public Works & Services



## WATER IS ESSENTIAL FOR LIFE!



## WATER AUDIT PROCESS

- Monitor Flows.
  - Baseflows - Loss and Leakage.
  - Quantify Uses Of Water.
  - Benchmark.
  - Inspect System.
  - Review Operational practices.
  - Review Maintenance.
- ⇒ Water Savings Options.



## TYPICAL ISSUES FOUND IN FACILITIES

- Ignorance - no Monitoring or benchmarking
- Low water efficiency
- Ad hoc water supply development
- Old leaking Systems
- Poor Maintenance
- Water authorities' information not used
- Limited use of lower class water for non-potable purposes



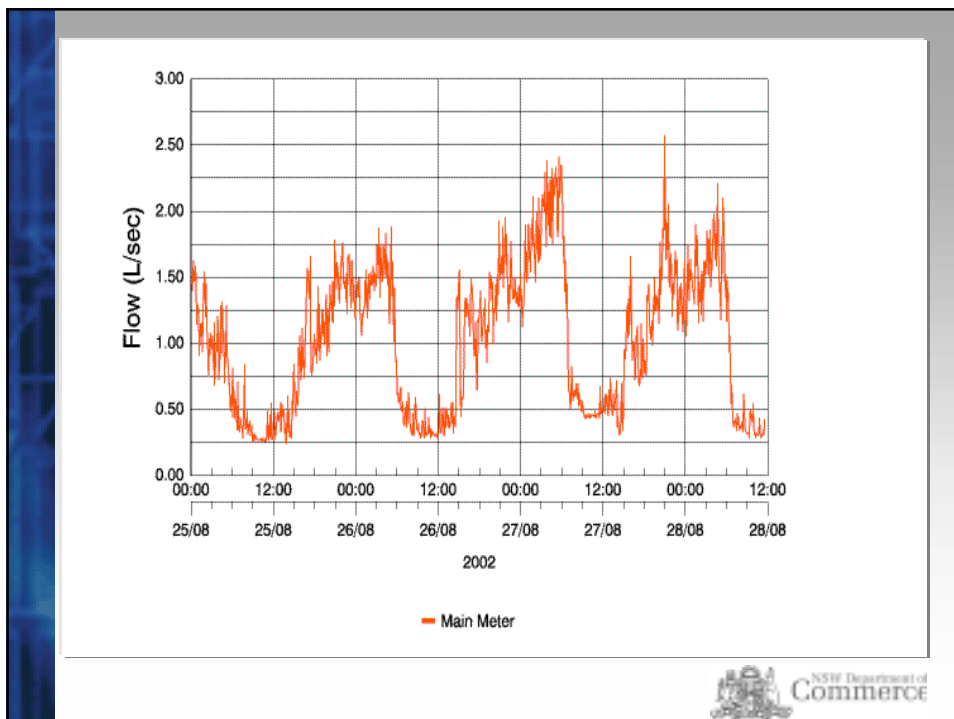
The screenshot shows a web browser window titled "HWSS - Pipe Flow Metering - HWSS How to use it". The main content area is titled "HWSS Demonstration Site Flow Metering". It contains several sections for configuring data display:

- Site Name:** A text input field.
- Display Site(s):** A list of checkboxes for "Main Meter", "Inflow", "Out Water", "Amenities", and "Display Total(s)".
- Add Site(s):** A list of checkboxes for "Main Meter", "Inflow", "Out Water", "Amenities", and "Display Total(s)".
- Subtract Site(s):** A list of checkboxes for "Main Meter", "Inflow", "Out Water", "Amenities", and "Display Total(s)".
- Start Date:** A date and time selector set to 2002, 00:00.
- End Date:** A date and time selector set to 2002, 00:00.
- Display Unit:** A dropdown menu set to "All Data".
- Flow Range Options:** Includes "Auto Range" (checked), "Min", and "Max" input fields.
- Select Plot Mode:** A dropdown menu set to "Based on the Date Range".

Buttons for "Process Data" and "Print" are located at the bottom of the form. The browser's taskbar at the bottom shows the system time as 11:38.

<http://www.mhl.nsw.gov.au/www/hwssdemo.html/>

NSTF Department of Commerce



## FACILITIES TO TARGET

- Any major water user.
- Hospitals.
- Food processor plant.
- Clubs.
- Hotels/motels.
- Schools.
- Shopping centres or large retailers.
- Large air-conditioned facilities.



## WATER SAVINGS ACHIEVED

- Clubs                      12% to 62%    Av 29%
- Hotels (3 star)    10% to 34%    Av 21%
- Hospitals              20% to 60%    Av 29%

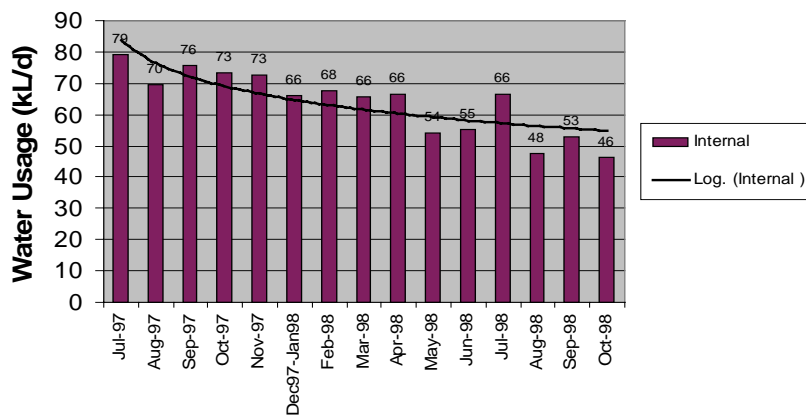


## CASE STUDY King Edward Hospital WA

- 200 bed hospital – 139 kL/d.
- 0.7 kL/bed/day (Benchmark - 0.4).
- Internal and external opportunities for increased water efficiency.
- Water usage reduced 40% - 84 kL/d. Saving 55 kL/d.
- Cost saving ~\$45,000 p.a.



### King Edward Memorial Hospital- Internal Water Usage



## CASE STUDY Leagues Club

- 108 kL/D - \$95k p.a. water charges.
- 197 L/Patron/day (x3 benchmark).
- Toilet leakage 60% Total Use.

### Outcomes:

- Water usage reduced 64% - saved 70 kLd.
- Cost saving ~\$45,000 p.a.  
(8 month Payback)



## CASE STUDY 3 Star Hotel

- 165 KL/D \$115k p.a. water charges.
- 0.4 L/Patron/day (x1.3 benchmark).
- Water efficiency Measures - Cost \$36k.

### Outcomes:

- Water usage reduced 64% saved 106 kL/d.
- Cost saving ~\$52,000 p.a.  
(8 month Payback)



## CASE STUDY Commercial Food Processor

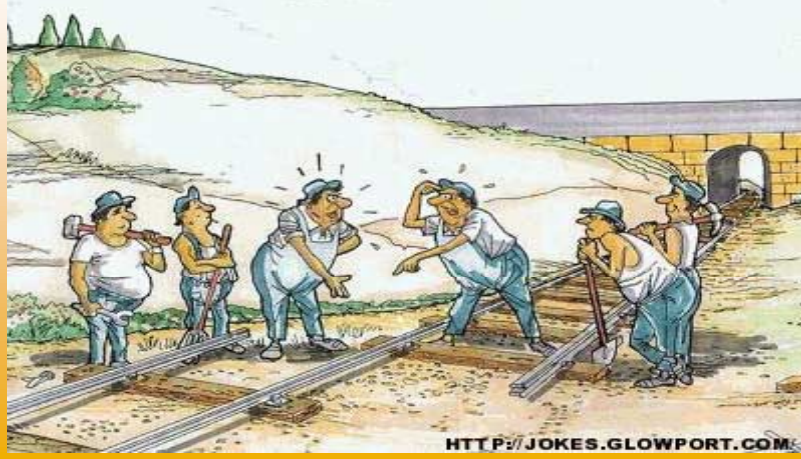
- 800 KL/D \$710k p.a. water charges.
- 1.7 L/L product (x2 benchmark).
- Water efficiency Measures - Cost \$150k.
- Unaccounted Base Flow 150 KL/a.

### Outcomes:

- Water usage reduced 33% - saved 260 kL/d.
- Cost saving ~\$315,000 p.a.  
(7 month Payback)




**ANY SUCCESSFUL PROGRAM  
REQUIRES TEAM WORK -  
GET PROACTIVE**



Sydney  
**WATER**

**GO  
SLOW**  
on the  
**H<sub>2</sub>O**



every drop counts

[www.sydneywater.com.au](http://www.sydneywater.com.au)



## SYSTEM LOSSES

- System Leakages NSW Country:  
7% to 31% (Av 17%) or  
70 to 500 L/connection/day.
- 80% leaks don't reach surface.
- What is your leakage ????
- Measure night base flow.  
~ Estimate Loss Rate



## RESERVOIR DROP TEST

- Isolate & feed system from 1 or 2 reservoirs But maintain normal pressure.
- Winter Mondays best.
- Measure drawdown v time.  
1am – 3am → Base Flow.
- Deduct major users & estimate others.  
⇒ Estimate System Losses.



## SYDNEY WATER LEAKAGE PROGRAM

- Surveyed 8,000 km main.
- leakage 0% to 20% Av. 10%.
- Large Leaks Going Into Stormwater/ Sewer.

### Outcomes:

- Saved 33 ML/d (3 to 8 kL/Km).
- Cost Water Saved Pays For Program.
- High Pressure Areas - lower leakage?



## BENCHMARK LOSS RATES

(Water Services Association Aust. )

- Lower Q. 30 to 100 L/Conn./Day
- Mid Range 100 to 200
- High Q. > 200

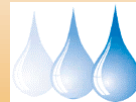


## *Active Leakage Control Undertaking Water Loss Reduction*



8.30 am – 4.45 pm  
29th October 2003

Harbour View on Queens Wharf,  
150 Wharf Road, Newcastle



## HAS THE DROUGHT MADE YOU THIS DESPERATE YET ?

