

Smart Metering as a Tool for the Remote Diagnosis of Leakage in Residential Households

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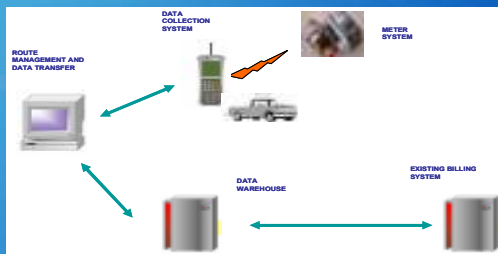
Automated Meter Reading Technology



- The remote measurement and evaluation of water consumption at a residential and commercial level using a FIREFLY® data logger and Commstar software.
- Using FIREFLY® water usage patterns can be recorded each hour and stored for collection via a drive by system.
- One of the key features of this technology; allows the water business to identify leaks on the customer side of the meter.



AMR system integration



The Project & Partner

3 year Australian Research Council Funded Project in collaboration with Queensland's Griffith University Qld and Wide Bay Water.

Primary Grant Objectives;

- To determine the impact of urban water demand management & conservation strategies on end-use water consumption.
- Lead to significant benefits through determining the value of demand management & conservation strategies

Research designed to ensure practical and academic outcomes.



The study

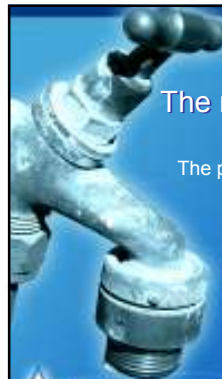
- The objective of the project was to identify household water leakage in residential properties located within a selected District Metered Area using smart meter technology.
- Household leakage can be identified in two ways, i.e.
 - Via an alarm which is picked up during the meter reading process. A trickle alerts flags that no '0' has been recorded in the previous 48 hours.
 - Via a review of the profile read when data is exported in to the software.
- The study evaluated the effectiveness of a repair program to minimise the identified water losses.



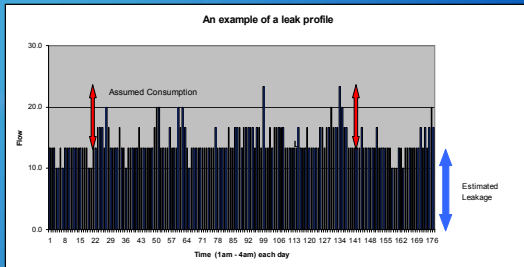
The research process

The pilot study covered four phases:

- leak identification
- household alert
- plumbing audit
- household survey



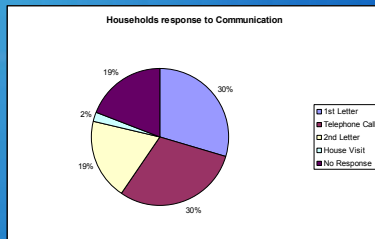
Leak Identification



Household Alert



Household Response

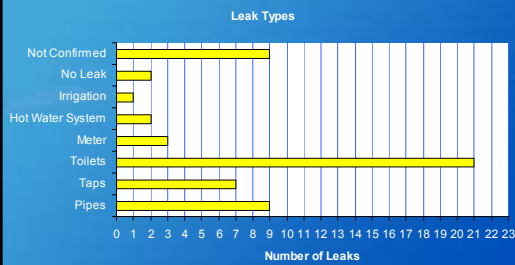


Point Vernon Results

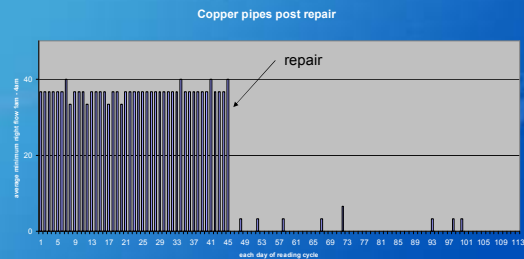


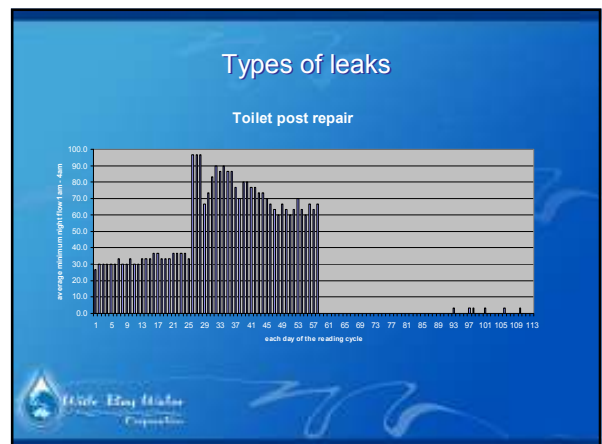
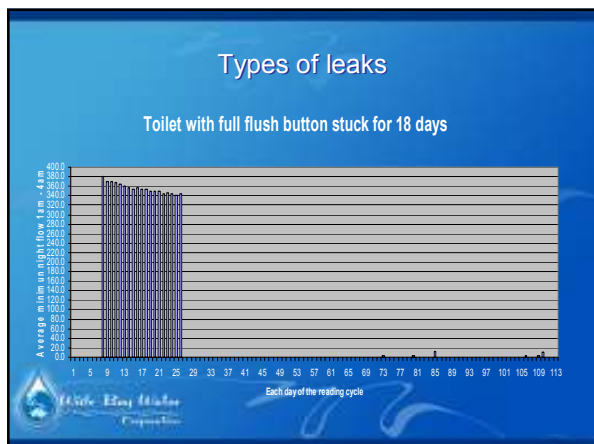
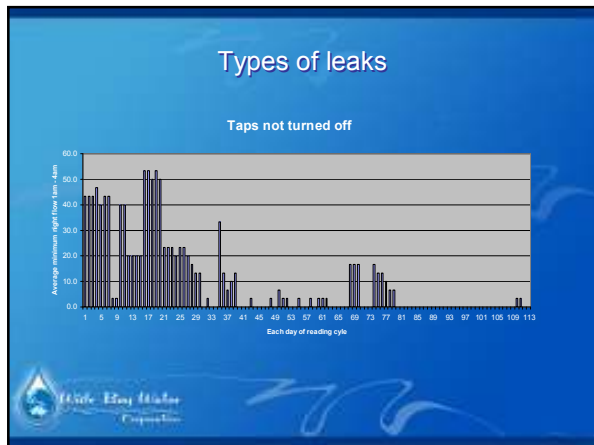
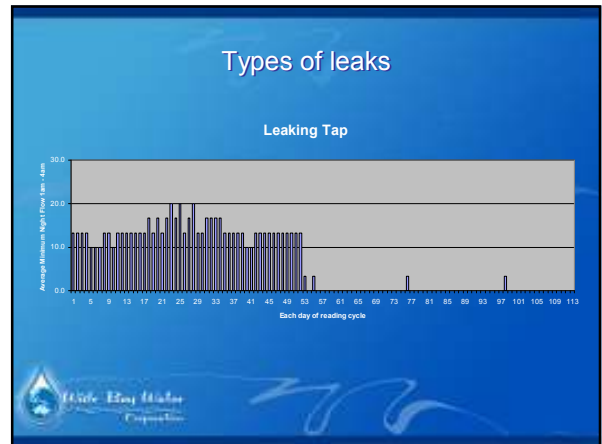
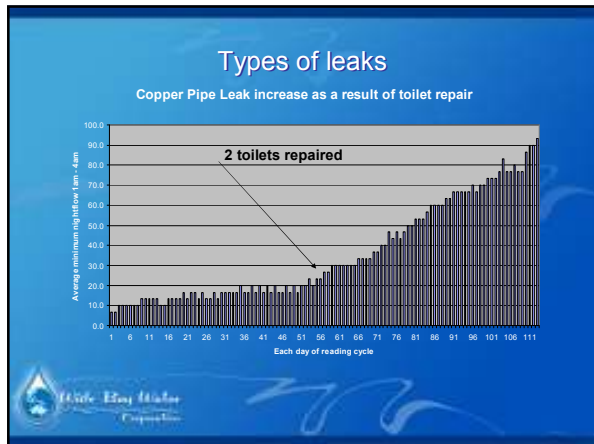
- 2,359 residential meters were read in a District Metered Area.
- 47 meters flagged a trickle alert.
- The readings between 1am and 4 am showed that 2% of meters accounted for nearly 24% of recorded consumption.
- 32 participated in the household survey.
- 36 households and their leak types were identified; some households experienced more than one type of leak.

Types of leaks



Types of leaks

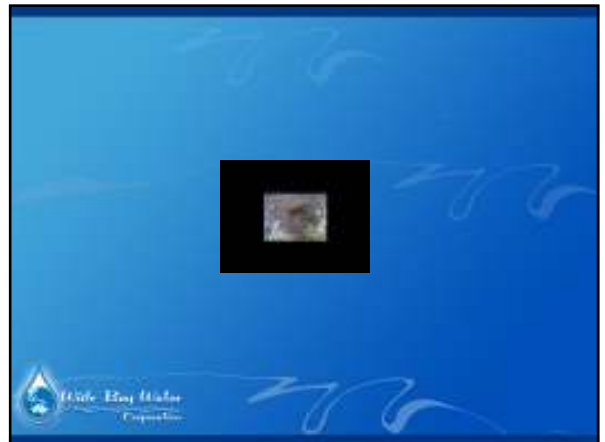
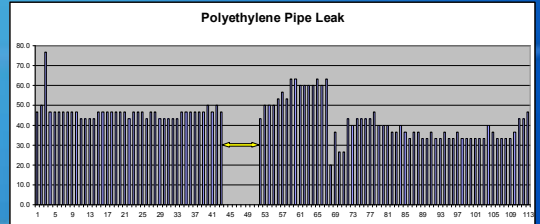




Toilet problems

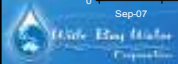
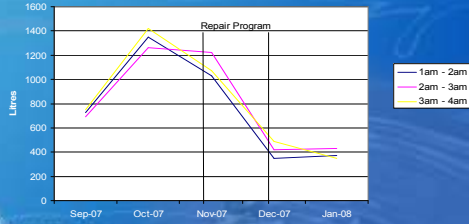


Hardest leak to find



Results of the repair program

Minimum Nightflow



Project Cost and Savings

- The general savings as a result of the program is 1095 litres per hour.
- The total cost of the program including project management and staff time was \$5,168.27 (excluding rebates); materials accounted for \$448.22.
- If the properties were allowed to continue leaking at the rate of 1095 litres per hour then the water lost would amount to 26,280 litres per day and 9,565,920 litres per year.
- The costs for intervention to undertake the identification and repair program equated to a cost of \$0.54 to save a kilolitre of water.

