



Asset Management

Metering as part of integrated network planning and management

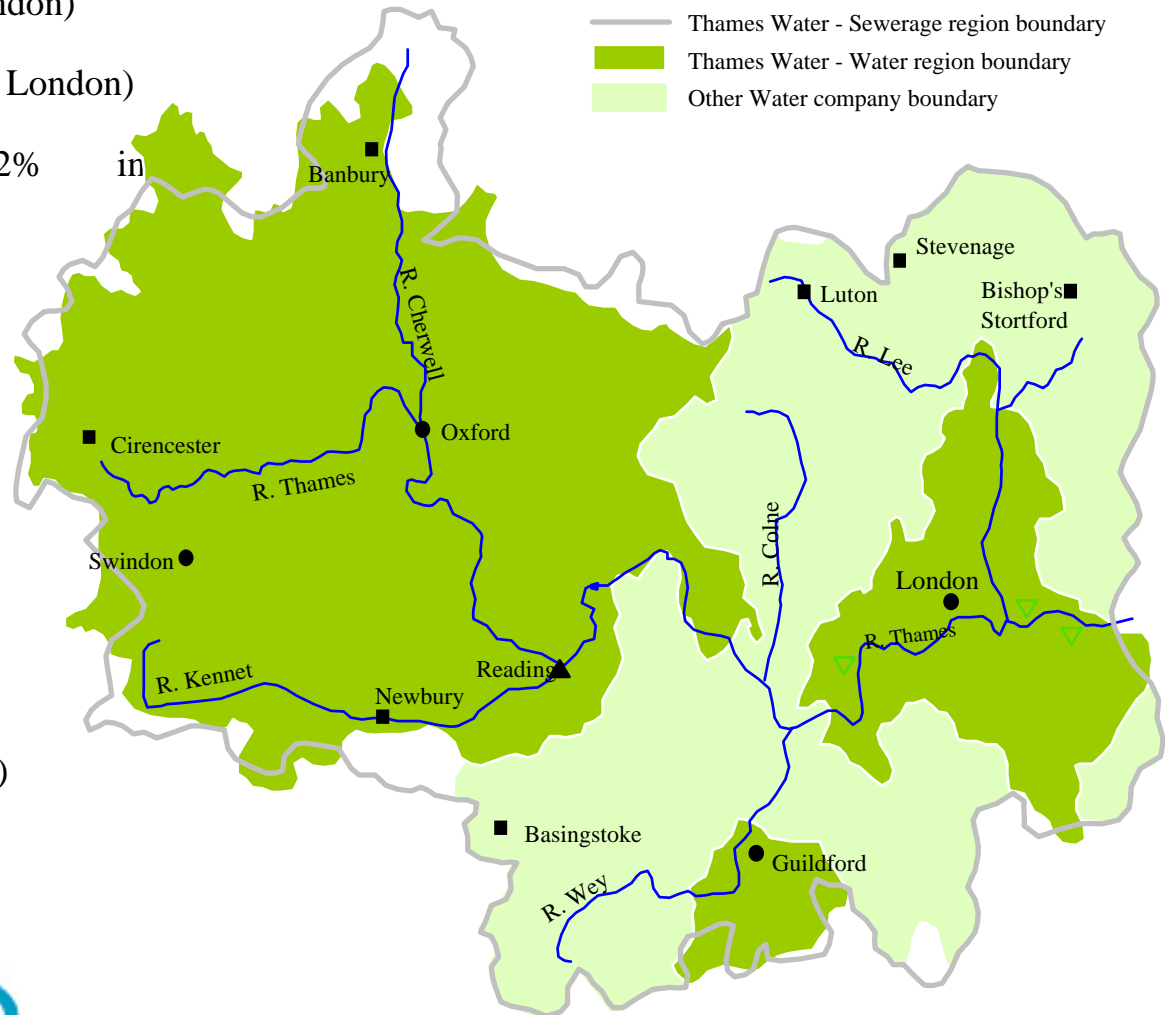
Richard Tidswell

Thames Water

Thames Water – An Overview



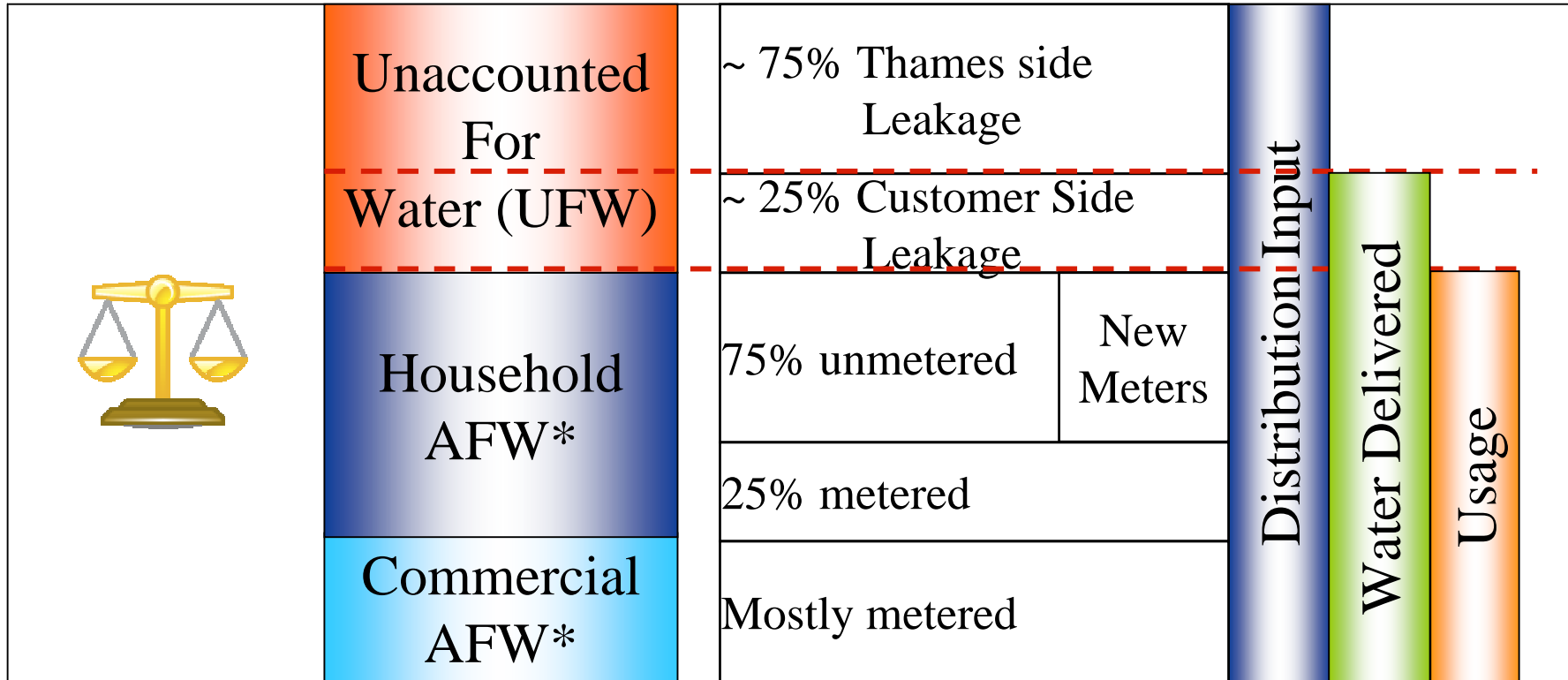
- 3.57 million properties (76% in London)
- 31,500 km of water mains, (56% in London)
- 27% domestic meter penetration (22% in London)
- 230 flow monitoring zones
- 3050 district meters
- 1490 DMAs (66% in London)
- 760 zonal meters
- 150 DI meters
- DI 2573 MI/d (78% in London)
- Leakage 698 MI/d (80% in London)



Source: JR09



The role of metering within the Water Balance



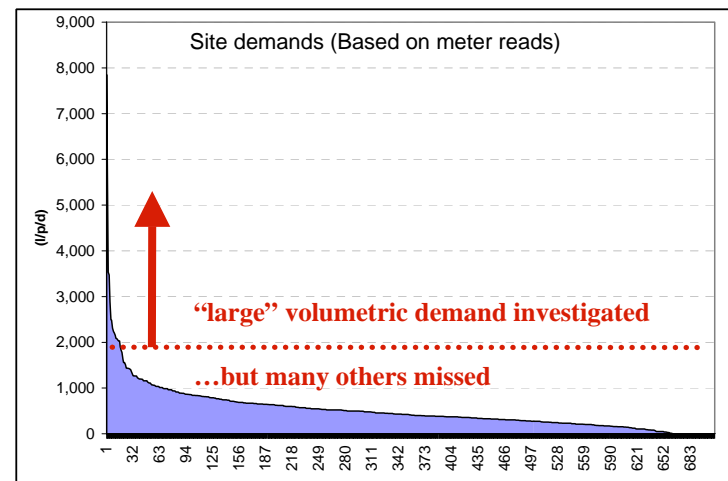
* AFW – Accounted for Water

Metering alongside mains replacement



Historical Strategy

- Replace all communication pipes and install new boundary boxes with meters
- Meters used to calculate a 'mass balance' based on a volumetric threshold
- CSL detected through:
 - Meter reading
 - Open Sounding
 - Enigma Logging
 - Data Logging
- Whilst the volumetric approach was a practical tool and found 'big leaks', it was not effective in identifying smaller leaks, which were more substantial in number.
- A new approach to CSL detection was required to realise the benefits of our VMR programme...

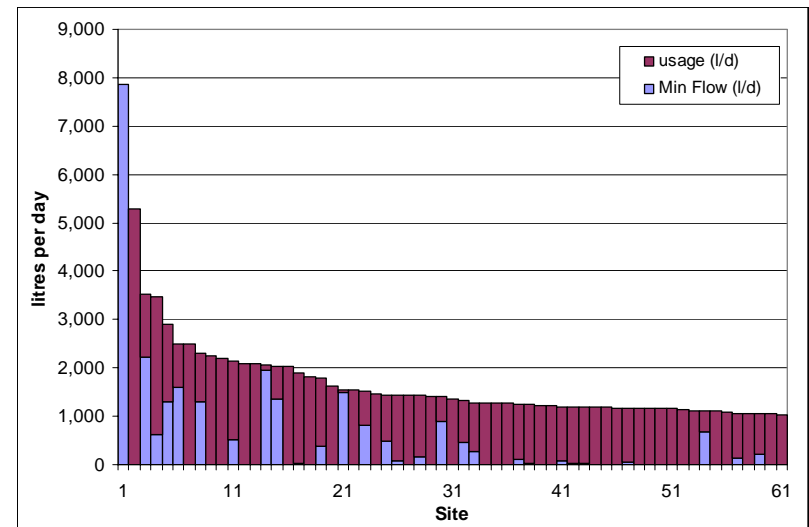


Metering alongside mains replacement



LeakFrog Technology

- Requirement: a process as simple as the volumetric approach but with the accuracy of a logger.
- The LeakFrog concept developed in house and produced in partnership with Qconnectis.
- Technology exploits periods of no usage to find leakage.
- The first full-scale field trial of CSL detection using the LeakFrog took place in Summer 2007, prior to full roll-out.
- Daily demand and minimum flow data used to calculate usage and the size and frequency of CSL losses.
- More cost effective method of leak detection (£MI/d).
 - LeakFrog detected 48% more CSL...
 - ...and confirmed CSL on 1:20 properties.



Company plans for AMP5

- Building on experience, we propose a programme of Integrated Demand Management (IDM) so as to produce a single, sustainable, and efficient demand management strategy.
 - In areas where we undertake mains replacement...
 - we will continue to install revenue meters...
 - activate them for billing purposes...
 - and promote water efficiency at the same time.
- The twinning of our metering and mains replacement programmes will enable us to deliver both at least cost to customers with minimal disruption.
- 75% of meter installations will be sited externally to enable CSL detection.
- We will install Automatic Meter Reading (AMR) as standard on all installations.
- We forecast a reduction in CSL attributable to increased metering of 48 l/prop/day.

AMR/AMI Meter Technology Specification



Preferred Specification

- Accurate Reading (Meter & AMI unit)
- Leakage - Programmable built-in logging capability to deliver a minimum of:
 - Minimum flow recorded over the last 7 days (time stamped)
 - Meter read exactly 7 days (168 hours) prior to current read (time stamped)
- Minimum 14 year radio unit battery life (guaranteed)
- Reverse Flow Alarm
- Differentiated Tamper Alarms
- Battery level Status
- Meter Stopped Alarm
- Alarms visible to Meter Reader & Remote resetting of Alarms and AMI unit possible
- Walk-by, drive-by and Fixed network Compatible

Market Capability / Key Considerations

- Currently nothing on the market that fully satisfies our preferred specification, although Fixed Network AMI would deliver majority of the leakage requirements.
- Fixed Network solution constrained by existing stock of “dumb” meters - requires a critical mass of AMR/AMI meters to have been installed.
- Strategy is to progress from Walk-by, via Drive-by, to Fixed Network.
- Currently trade-off between functionality and ongoing maintenance requirements:
 - Transmitting large data packets = shorter battery life
 - Transmitting data frequently = shorter battery life
- Thames is currently evaluating a 10-year managed services outsourced solution to incentivise technological development to find an optimal specification

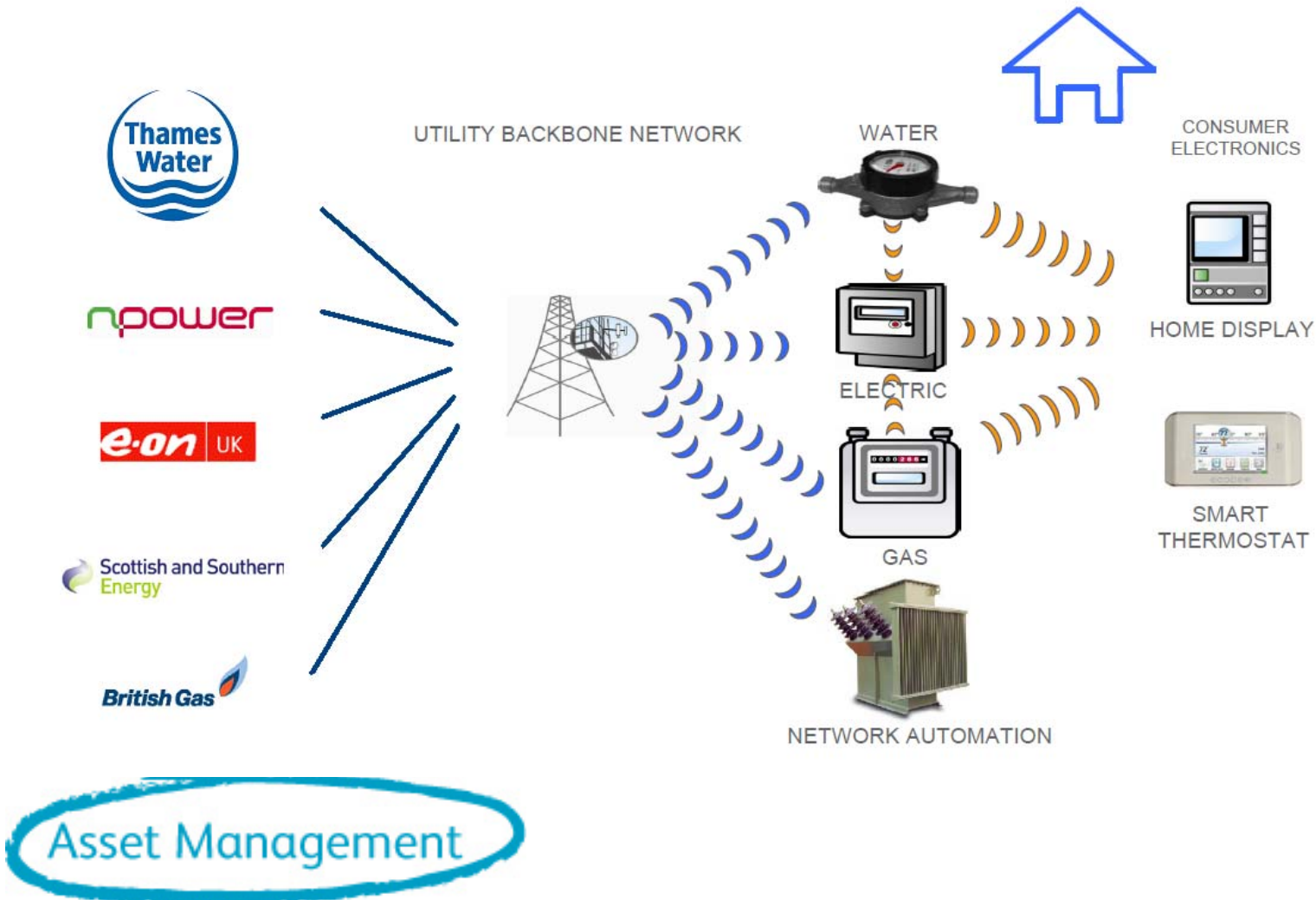
AMR/AMI Meter Technology Specification

Energy Sector Smart Metering (1)

- The scale of water company metering proposals over the next 10-15 years, presents a clear opportunity to work alongside the energy sector's plans for smart metering roll out.
- Thames' plans recognise the opportunity presented by the energy smart metering roll-out, to use a common infrastructure to transmit consumption data for both energy and water utilities.
- We support the Central Communications option outlined in the Department of Energy and Climate Change (DECC) consultation as this would appear to offer the best opportunity for a common standard and interoperability between different utility suppliers.
- We are currently testing the technical feasibility of this solution, to see whether water meter data could be sent to and be received by central communications infrastructure.

AMR/AMI Meter Technology Specification

Energy Sector Smart Metering (2)



Summary

- Meters initially installed alongside mains replacement for network monitoring purposes to quantify usage, understand leakage, and understand wastage.
- LeakFrog (enabled through metering) enabled us to quantify the Thames side savings and to target CSL.
- Increased revenue meter penetration will allow us to more accurately account for usage, wastage and leakage.
- Increased AMR meter penetration will facilitate improved CSL targeting, network management, and reduce the cost of CSL detection (compared to LeakFrog).
- The Central Communications infrastructure being developed by the energy sector presents an opportunity for collecting volumetric consumption data at an increased frequency and resolution.

Asset Management



Asset Management