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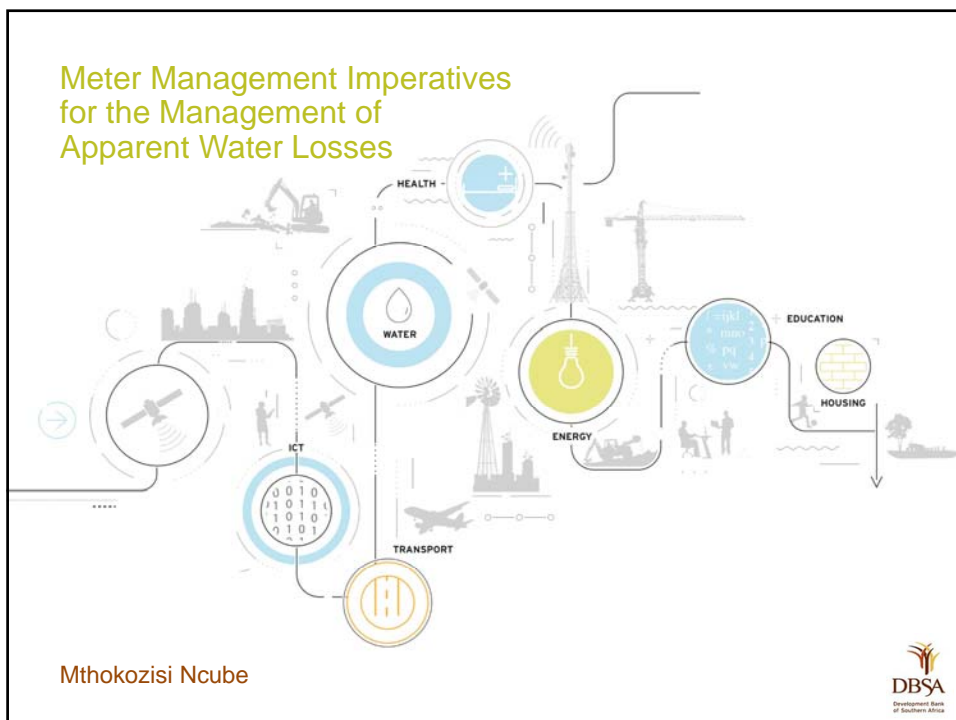
DBSA Vulindlela Auditorium, Midrand, Gauteng, South Africa
22 - 23 August 2017

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Meter Management Imperatives for the Management of Apparent Water Losses

Mthokozisi Ncube

Participating and supporting organisations:



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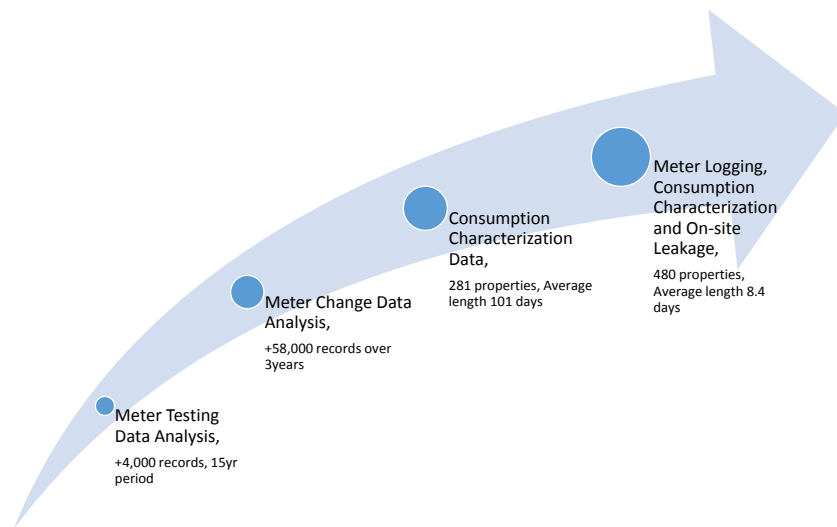
Key Points

- 1 Metering, as is the management thereof, is both a **science and art**. Guidelines, policies, applications etc. must be based on **empirical** evidence as much as is possible. **Question and validate all assumptions**.
- 2 Best practice apparent water loss measurement is **very resource intensive** and value for money is not always guaranteed. Alternatives have great promise but require careful planning, systematic processes and validation.
- 3 **All meter data is important**. Meter data curation is essential for improved decision making and optimal (and cheaper) meter management. **Routine** info can unlock vast opportunities. **Plan** for it.
- 4 Any WCDM initiatives that ignore the above are at best sub-optimal. Being ignorant of you meter issues doesn't take the problems away, nor does pretending they don't exist.

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Background

The process and journey to date. An empirical basis for guidelines and recommendations



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The process and journey to date. An empirical basis for guidelines and recommendations

Meter Testing
123 meters (of targeted +400 meters)

Field assessment of various advanced meters in various properties

Assessment of Apparent Water Losses and Method Comparison

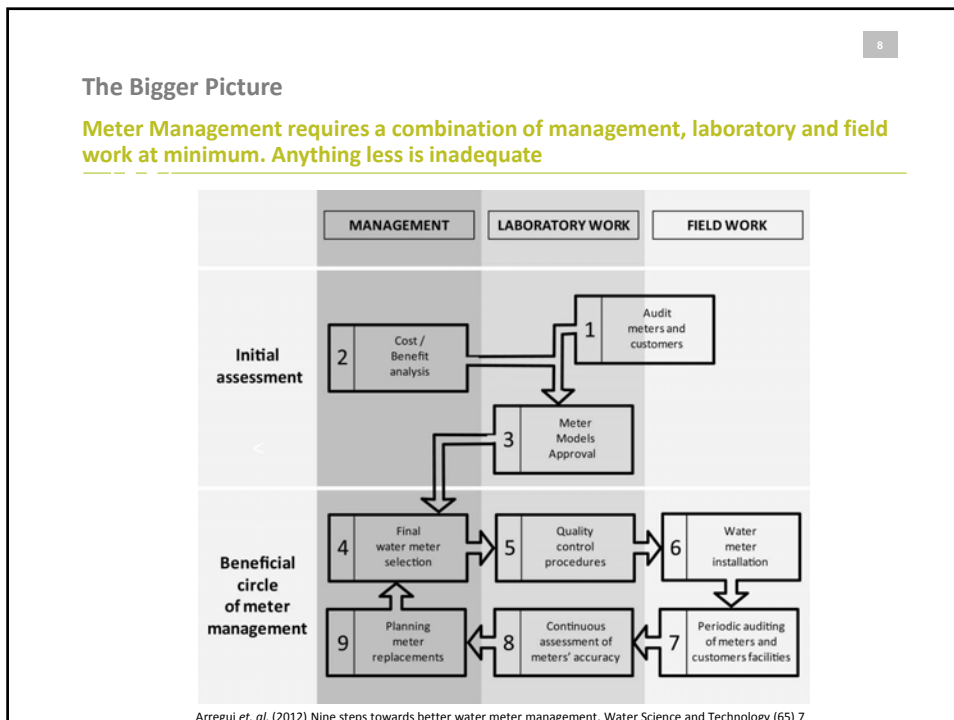
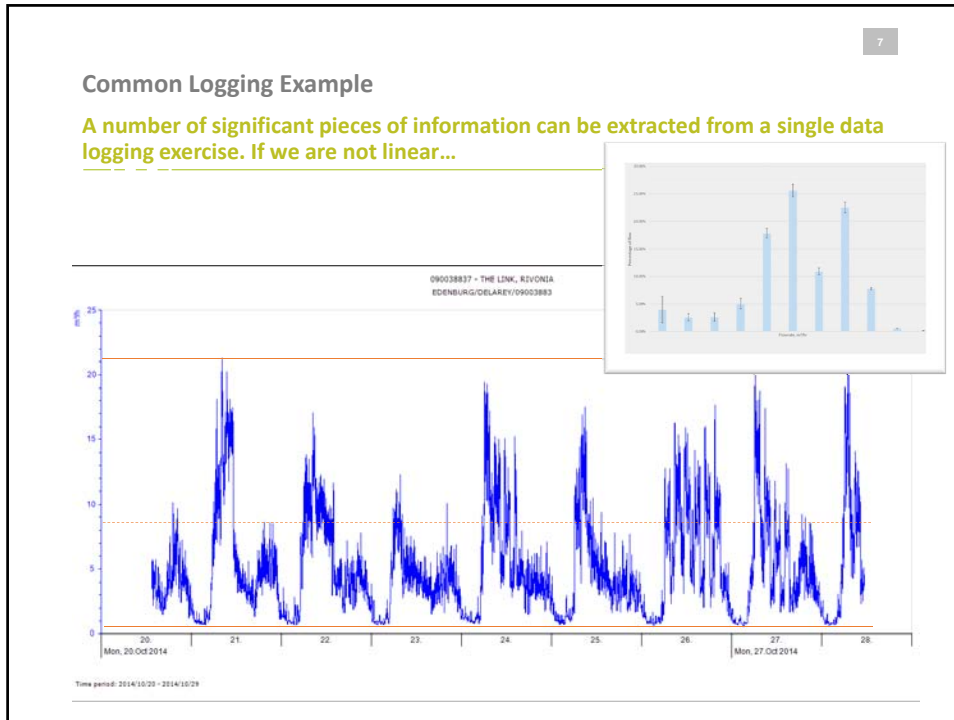
Monthly Consumption Classification and Analysis
200,000 records out of +600,000 records
5 - 15 years data

Metering Specification and Guideline Manual for Johannesburg Water

- Normative specification and internal guideline document
- Standardisation of domestic meters to 15mm Class C.

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There are many sides to the metering story. Familiarise yourself with as many sides as possible for a fuller picture



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Meter Management and Information Database

A foundational requirement that provides the basis for meaningful meter management and supporting analysis requirements.

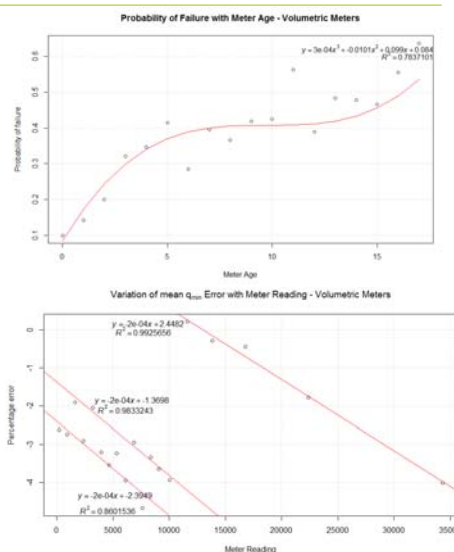
- Functionality to support **meter information, meter verification (test) records, meter maintenance records,**
- Meter information to include
 - meter specification details such as serial number, make, model, type, class, **permanent flowrate (size), number of dials, factor, initial verification information...**
 - Installation details such as date, geolocation, **connection/service type, etc.**
 - Calibration requirements
- Support for maintaining the integrity of actual meter reading and throughput. Do not allow **meter cloak-overs.** If you must, have appropriate management flags.
- Each device must have its **complete** history under a unique device name
- **Meter changes will be very expensive with incorrect device information.** Correcting the info upfront will save you lots of money

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Meter Testing

All testing data is important, regardless of the purpose of the test. Plan for its collection, collation and analysis.

- **Historical performance per meter type** with disaggregation by reading and age, at a fraction of the cost.
- **The more the data, the better** the deductions that can be made. Plan for additional test flow rates improve insight.
- **Randomised sampling** is still essential to supplement data and **routine makes it cheaper.** Success rate can be low, prepare for it.
- Start with the **initial verification records** to understand the starting point of your meters. These cost you nothing.

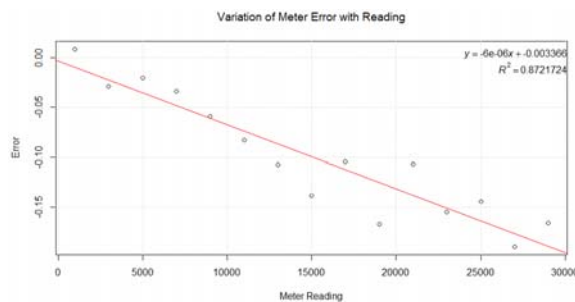


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Meter Maintenance and Replacements

Changing water meters also provides additional useful meter performance information that can leverage meter management.

- Provide **evaluation of efficacy of meter changes** and the entire process. Remember why you change meters in the first place – **check if gains are achieved.**
- **Data quality and completeness is critical** with poor systems being a huge deterrent and let-down.
- **Use of AADD** in prioritising work and analysing results has a huge impact
- Its only a **proxy**, not the “truth”

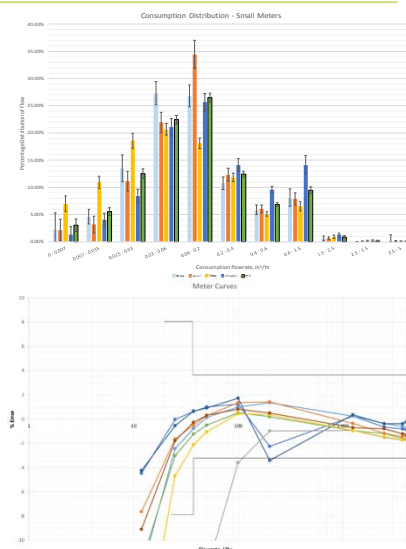


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The Meter Selection and Sizing

This is by far the greatest contributor to apparent losses. The better the effort placed in doing this exercise correctly, the better will be the results.

- **A one size bigger meter can lead to +85% increase in apparent losses.** Unless there is better information, always put the smallest meter possible.
- **+60% properties have on-site leakage.** Think of these losses when selecting/sizing meters – they can be as **high as 40kl/month**
- Only plausible when **consumption profiles** per consumer category and **meter accuracy** per meter type are known. **AADD** has an impact on the distribution
- **Reliable meters** can only be determined through the **evaluation of meter testing and change data**



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The Meter Selection and Sizing

Is also predicated by well thought-out meter information systems that provide the basis for meaningful analysis. .../2

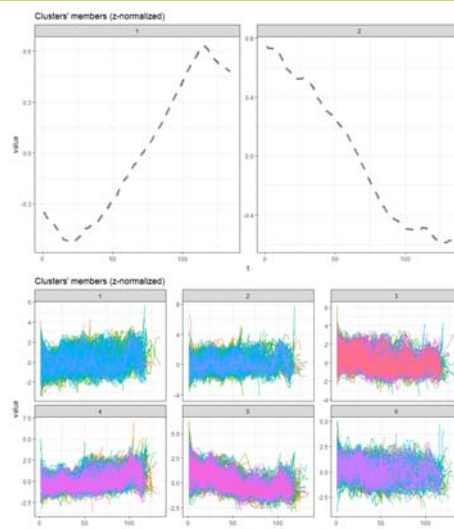
- Should be **the basis of procurement decisions** – where and what to buy, and most importantly where not to buy
- Be wary of the permanent flowrate gap between 25mm (threaded) and 40mm (flanged). This missing middle needs appropriate meters – consider 32mm and 42mm threaded.
- Be wary of **sizing for fire flows** using the **permanent flowrate**. Fire is not permanent, normal consumption is. Rather allow meters to be damaged and changed.
- **Leverage** on data from various sources; talk to other colleagues and utilities

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Consumption Database

Beyond billing, it is the “new” source of data for determining apparent losses and beyond. Data is the new gold

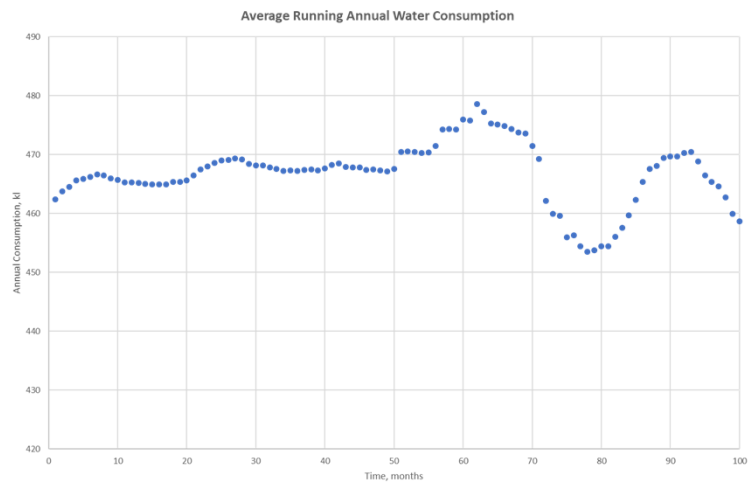
- Customer information must be accurate
- Immerse potential in using **data mining tools** to analyse consumption and water losses
- Potentially the most cost-effective way of extracting useful information
- Still **requires validation** with traditional methods. Before that, use at own risk
- Analysis is as good as the quality of the data. Poor data quality and billing crises don't help



Consumption Database

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A useful sanity check on the performance of the utility globally and in various segments. Data never lies

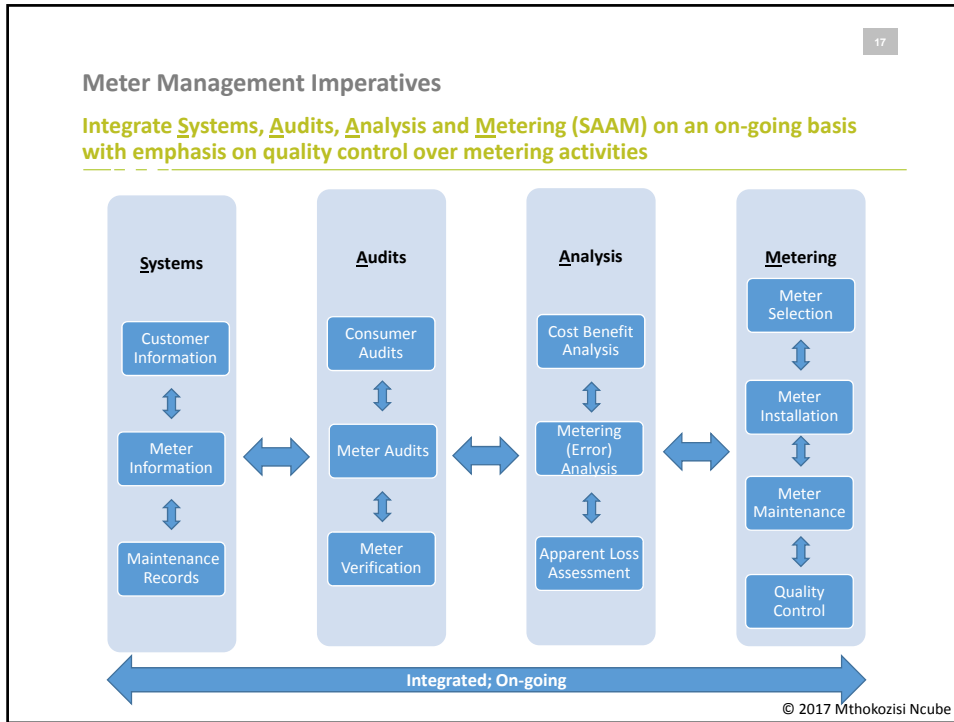


Quality Control

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The proof of the pudding is in the eating. Establish routines to ensure what needs to be done is being done the right way and at the right time

- Are meters supplied meeting the defined specifications and requirements? **The bigger the flow the more rigorous the QC requirements**
- Are meters installed to specification and is the information provided correct?
- Do your system(s) data on reflect reality? Go beyond the serial number.
- Do the right consumers have the right meters? Forget your billing classifications and **evaluate what water is actually used for.**
- Can your verification processes and the preservation of custody transfer data withstand legal scrutiny?
- Are you changing the right meters at the right time?
- Are you information systems managed properly and give the expected information?



Thank You!

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