## Flow Measurement



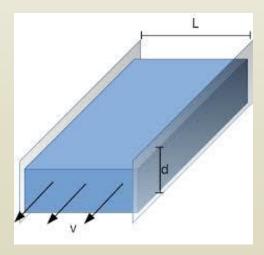
## Why measure

- "Triggers":
  - To improve water management
  - Compliance
    - Market driven
    - Legal requirement

## What to measure

#### Measuring device possible functions:

- Velocity vs Flow rate vs Volume
  - Flow depth vs pipe diameter
- Instantaneous vs Cumulative
- Display vs Store vs Transmit





## How to measure

Open channel measurement

Pipe flow measurement





#### Where to measure

(Example: river → booster →dam → pivot)

DWS / WUA



Grower

## Measuring: Tail end



#### Device selection

- Select the correct device for the water quality and required outputs
- Select the correct size device to match the flow rate(s)
- Install the device according to the manufacturer's recommendations
- Verify the device's accuracy after installation and thereafter at least every 2 years

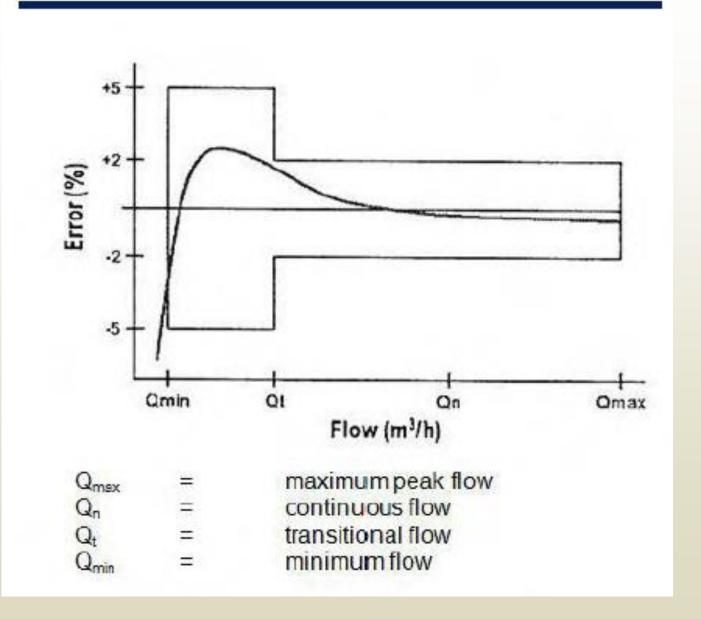
### Important considerations

- Type of flow and flow conditions
- Water quality
- Flow range
- Pressure head
- Accuracy
- Repeatability
- Installation conditions
- Data output
- Power requirement
- Operating requirements
- Life expectancy

- Maintenance, trouble shooting and repairs
- Resistance to tampering
- Environmental protection
- Existing devices and user acceptance of new methods
- Reliability
- Legal constraints
- Impact on the environment
- Cost



#### **Typical Accuracy Curve**



### Cost of measurement

- Cost of measurement implementation:
  - Piped (pressurised) systems:
    - R27 757 per system
  - Open channel (flood) systems:
    - R36 831 per system
- Cost of managing measurement systems: R30.22/ha

(Costs based on 2008 WRC survey results, adjusted for inflation to be applicable in 2018)

# Managing measurement projects

- Assign the responsibility for implementation to a skilled person
- Preparation is key
- Install the most appropriate technology that can be afforded
- Commit to an implementation plan

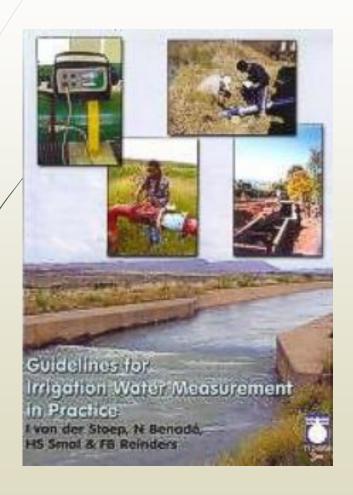


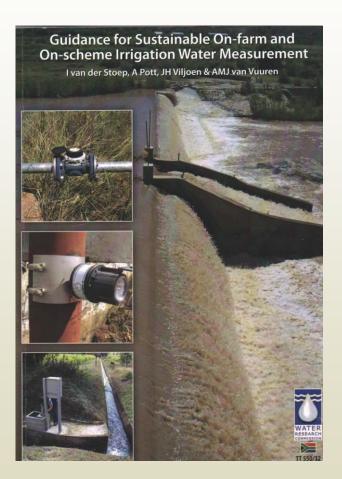




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# Commit to an implementation plan





Download from WRC or project website:

www.watermeter.org.za