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## Government of the Republic of Zambia

### Professionalising Groundwater Development in Zambia A five-day Short Course on Drilling Supervision

9th July - 13<sup>th</sup> July 2018

Dotun Adekile & Max Karen



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## Unit 3

# Cost Effective Boreholes- what does it mean for Zambia?

Dotun Adekile

9<sup>th</sup> July 2018

# Principle 1 - Drilling is by Professional Enterprises and Consultants under national standards

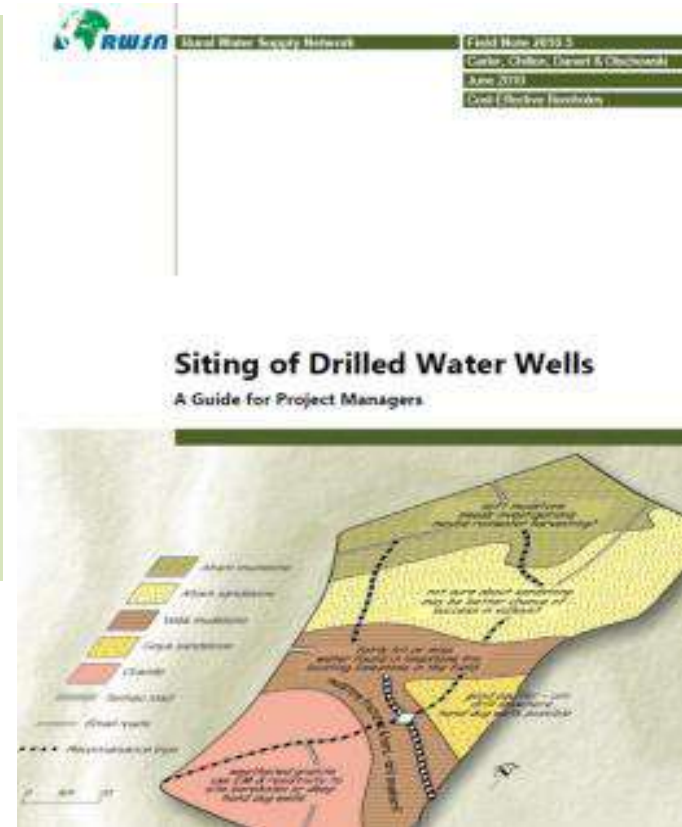
- Drilling is carried out by competent local private firms or NGOs
- Subsidised drilling by government or donors is avoided
- Siting and supervision of boreholes are carried out by local professional consultants
- Drilling companies and consultants are registered and licensed
- There should be a national drillers association

- Who drills in Zambia?
- Who supervises drilling?
- Are drillers and consultants licensed?
- Is there a national drillers association?



# Principle 2 - Appropriate siting practices are utilised and scientifically carried out

- Siting is carried out by competent personnel
- Hydrogeological desk study and reconnaissance are carried out
- Risks are categorised
- Geophysics only where appropriate
- Community preference considered in site selection

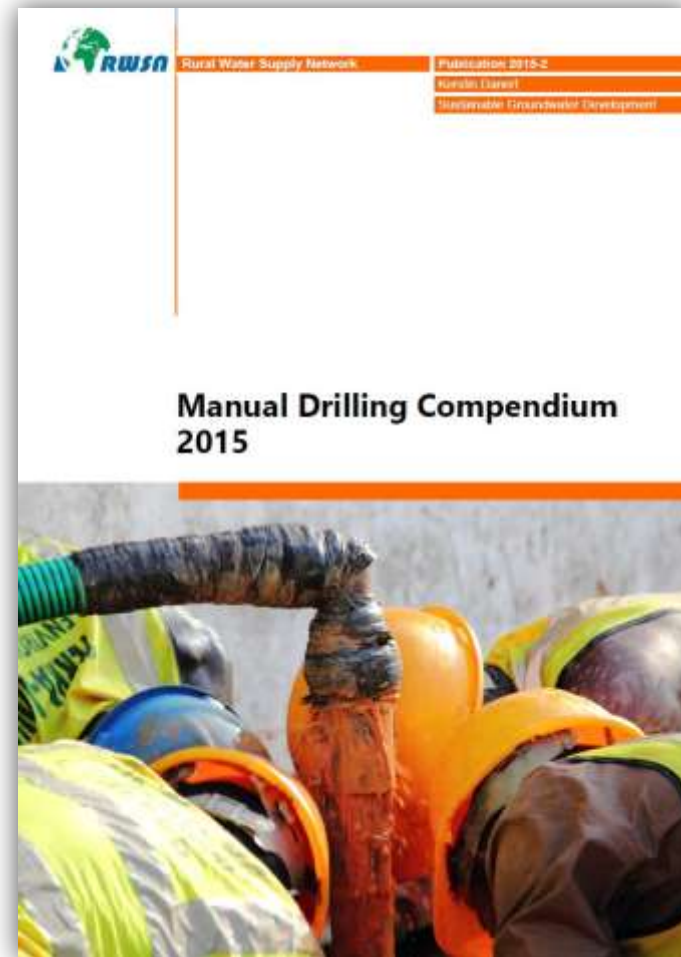


What is the situation in Zambia?

# Principle 3 – Construction method is economical and drilling technology matches borehole design

- Well depth is not over specified or under specified
- Low cost methods are considered first
- Then small rigs before the use of bigger rigs.

Is manual drilling commonly practised in Zambia?  
Are manual drillers engaged by government?



# Principle 4 – Procurement: Contracts are awarded to experienced and qualified contractors and consultants

- Procurement undertaken through national government systems rather than those of donor or support organisations
- Engagement of contractors and consultant is by competitive bidding
- Contract packaging is for multiple boreholes
- Mechanisms developed for small enterprises to be engaged

Are participants aware of the Zambia Public Procurement Act?

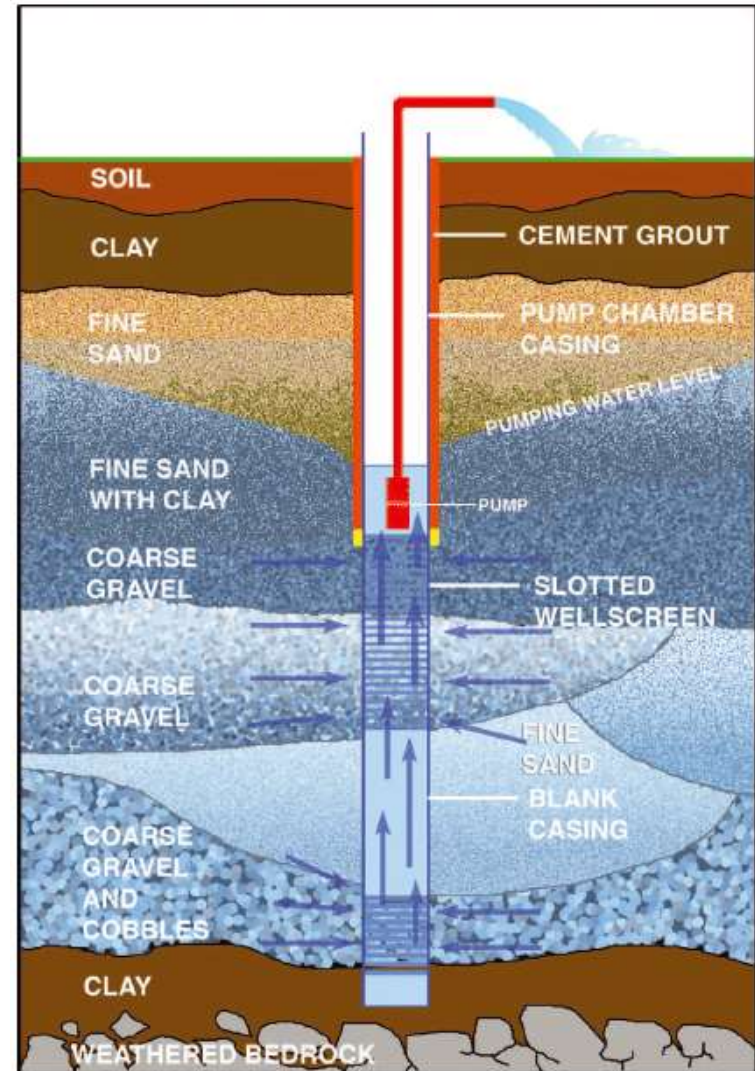




# Principle 5 – The design is cost effective, to last 20-50 years based on minimum specification

- Minimum specification for fit for purpose boreholes in terms of yield, diameter, depth, casing and screen etc
- Procedure for development and pumping tests are clearly specified
- Water quality tests are undertaken

Is there a Zambia National Drinking Water Quality Standards?



# Principle 6 – Arrangements are in place for proper contract management, supervision and payment

- Contract management is based on government systems using standard contract forms
- Contract documents are straightforward and understandable
- Proper supervision by professionals
- Payment should be timely

Are there standard contract forms?

Who supervises drilling in Zambia?

Is payment usually timely?





## Principle 7 – High quality hydrogeological data for each borehole is collected in a standard format and submitted to the relevant government authority

- Data requirements from the drilling are specified and responsibilities for collection are clear
- The information is submitted to the appropriate authority
- Renewal of drilling licenses linked to the submission of borehole completion reports
- Each borehole should have its own unique identification number
- Drilling data are collated annually and published



Which agency is responsible for borehole data collation?  
Is there a borehole numbering system?

## Principle 8 – Storage of hydrogeological data is undertaken by a central government institution with records updated, information made freely available and used in preparing subsequent drilling specification

- A national drilling (or regional database is established and kept up to date
- The data from all drilling programmes and projects in the country should feed into database
- Data from the database should be available free of restriction



## Principle 9 – Monitoring: Regular visits to water users with completed boreholes are made to monitor functionality in the medium as well as long-term, with the findings published

- Government's monitoring system should be utilised rather than the development of parallel systems
- Monitoring of functionality, including analysis and action taking should be undertaken at 6 months, and then at yearly intervals for at least ten years after construction
- The findings of the monitoring work should be linked to action and made public



# Other considerations

- **Planning and coordination**- Done at the lowest level of government.
- **Community selection process** - Should be well defined and transparent.
- **Operation and maintenance** -The long term operation and maintenance requirements for the full lifespan of the technology should be considered during the planning stage.
- **Environmental impact and groundwater** - Should be managed and monitored to protect vulnerable resources from over exploitation.





**Thank you!**

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