


British Geological Survey  
NATURAL ENVIRONMENT RESEARCH COUNCIL

Applied geoscience for our changing Earth

## The role of hydrogeology in WASH projects in Africa


Alan MacDonald<sup>1</sup> and Roger Calow<sup>2</sup>

<sup>1</sup>British Geological Survey/ IAH Burdon Network  
<sup>2</sup>Overseas Development Institute



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## Water supply, Sanitation and Hygiene

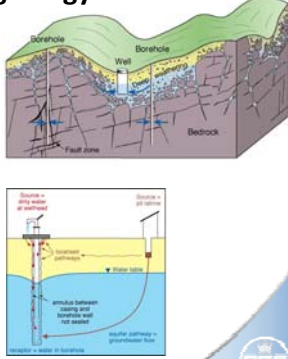



Often rural water supply  
Secure supply: *adequate quality & quantity; accessible; reliable; low cost; easy to manage*  
Low technology  
Integrated programmes  
Large component of social development

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## Where's the hydrogeology?


Aquifer with  $T > 1 \text{ m}^2/\text{d}$   
Recharge  $> 10 \text{ mm}$  per annum  
Adequate groundwater quality  
Protected from contamination

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## BUT....

Hydrogeologists often not involved...

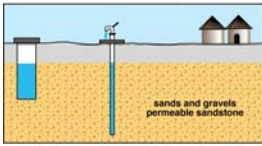


...or confused with geophysicists

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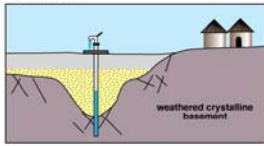
## Is that a problem?

Easy to find groundwater: boreholes and wells can be sited anywhere



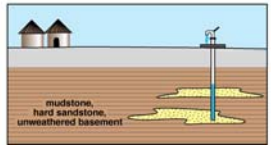
sands and gravels permeable sandstone

Hydrogeology generally understood: geophysics interpreted using simple rules can be used to site boreholes



weathered crystalline basement


Hydrogeology complex: successful boreholes and wells difficult to locate using simple rules. Detailed investigations required.



mudstone, hard sandstone, unweathered basement

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## Hydrogeology in WASH

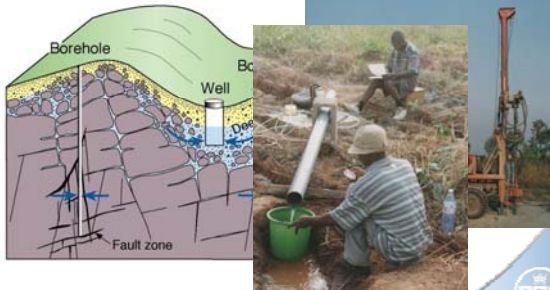


- Constructing water supplies
- Designing projects
- Generating hydrogeological knowledge
- Groundwater governance
- Research
- Impacting Policy

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## Hands on roles

Constructing more reliable supplies

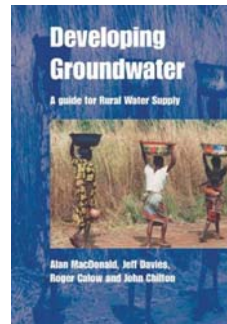


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## Overseeing projects

Improving cost effectiveness and reliability



- Tender development
- Reconnaissance
- Choosing techniques
- Borehole/well design
- Checking for corruption
- Building databases and knowledge

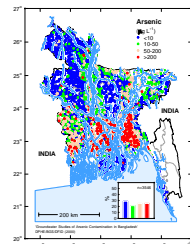
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## Generating regional knowledge

- Hydrogeological mapping
- Advice and databases
- Water quality data

Providing base data for everyone

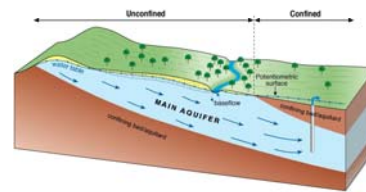


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## Groundwater governance

- Monitoring – early warning systems
- Regulation – licensing and protection of resources
- IWRM – ecosystem services approaches



Ensuring equitable distribution and sustainability

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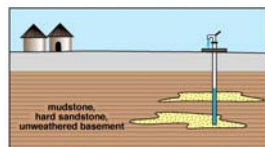


## Critical Research

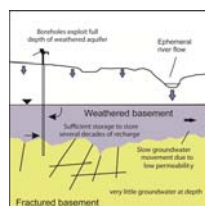
Filling the gaps – addressing new issues



New techniques



Difficult areas



Climate change

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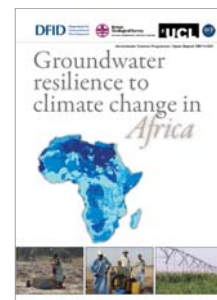
## Impacting Policy

Advocating for hydrogeology and WASH to be taken seriously

National: fighting for WASH and money; setting standards

Within NGOs: importance of considering groundwater

International – world bank, UN Agencies: helping to develop evidence based policy



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## Summary

WASH needs hydrogeologists... but  
not all about drilling supervision

Hydrogeologists not generally  
involved need to make our case

IAH Burdon Network. What can IAH do?

*Supporting sustainable groundwater  
development for poverty reduction*

amm@bgs.ac.uk

