

SANITATION PRACTICES AND THEIR POTENTIAL INFLUENCE ON GROUNDWATER QUALITY IN LUSAKA

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LIQUID WASTE DISPOSAL

EXCRETA DISPOSAL

PUBLIC HEALTH PROBLEMS

1. STATEMENT

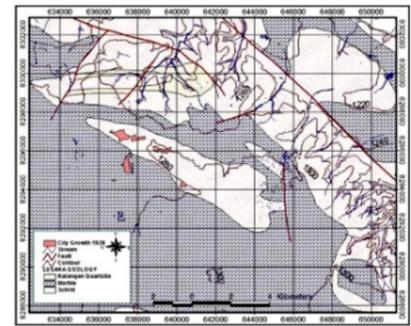
- Lusaka's growth has been greatly influenced by the underlying geology – *Marbles ad Schists* – and the associated landforms.
- One condition to proceed with construction of new capital at current site entailed a restriction on the population to inhabit it.
- However, since independence in 1964, the city has experienced rapid growth of population which has created problems of meeting the basic social needs.
- The immediate problem of housing – solved by relegating most of the population to high-density settlements, where excreta disposal is through pit latrines and provision of water is mainly from shallow wells.

2. INITIAL CITY SETTING



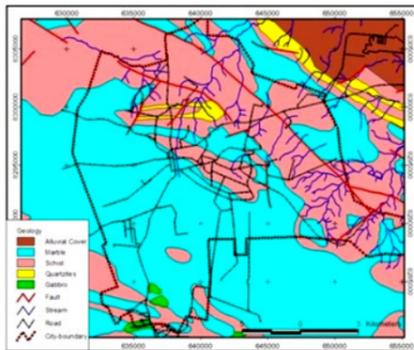
Lusaka:

- Located
- Inaugurated new capital city on Friday, 31 May 1935.
- Chosen because of its central location @ intersection of main road network.
- Design Plan of 1950 detailed it to accommodate a population of 125,000 within 25 years: 100,000 Africans & 25,000 Europeans.

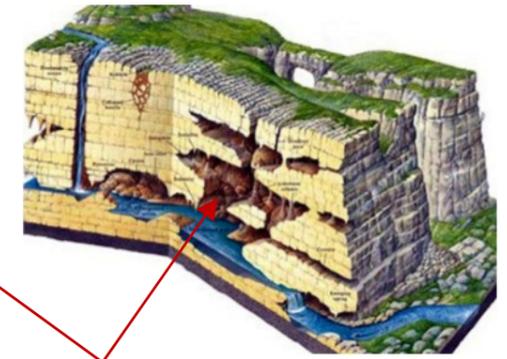


The figure shows the layout of the city in 1928

3. GEOLOGY



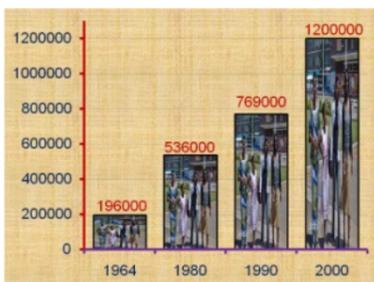
Comprises schists and quartzite dominated by thick and extensive sequences of marble, which are intensely karstified,



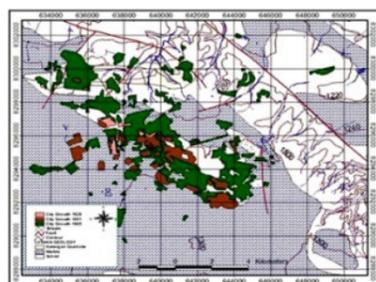
Karstification in marbles

Geology of Lusaka

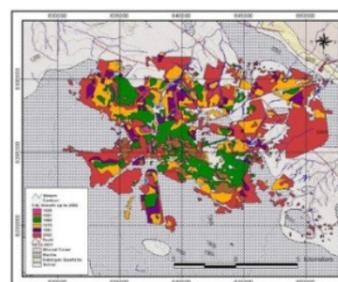
4. EVOLUTION OF THE CITY AND LOSS OF A VISION



Popn growth in Lusaka (1964-2000)

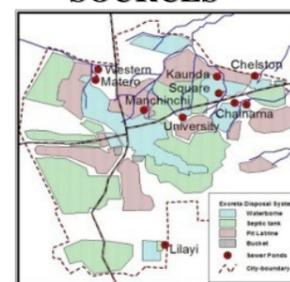


Lusaka in 1965

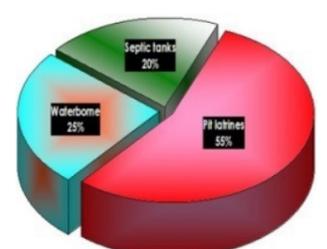


Lusaka in 2002

5. LIQUID WASTE DISPOSAL & WATER SOURCES



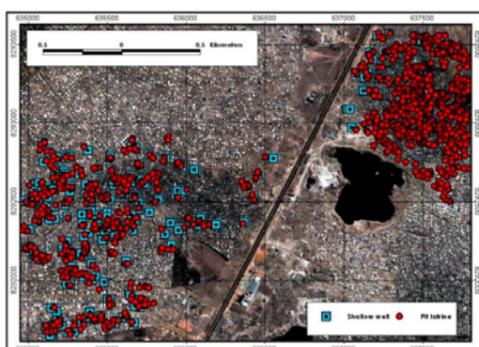
Disposal systems



5. LIQUID WASTE DISPOSAL & WATER SOURCES (contd.)

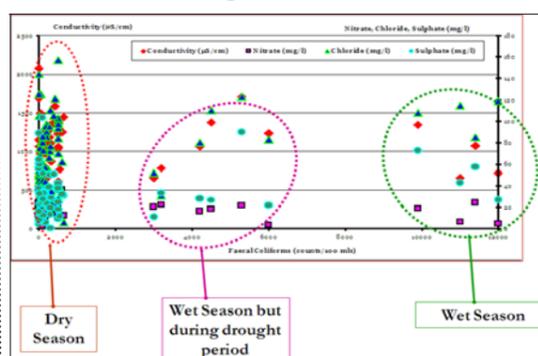


Shallow well in close proximity to pit latrine



Mapping of shallow wells and pit latrines in two compounds

6. WATER QUALITY



Sampling Campaigns

- Mid-November 2003 – just before the onset of the rainy season
- February/March 2004 – at the peak of the rainy season
- October 2004 – at the peak of the dry season
- March 2005 – in the rainy season but during a drought period

7. PUBLIC HEALTH PROBLEMS

The most important water quality problem in most parts of the city is that of faecal pollution together with the associated disease-causing organisms. This is particularly serious during the rainy season, when faecal contamination is flushed into the groundwater system and heightens with increasing levels of saturation.

YEAR	TOTAL CHOLERA CASES IN LUSAKA
1996	2,469
1997	2,492
1998	0
1999	6,485
2000	0
2001	887
2002	2
2003/2004	4,734

Source: LDHMB cholera reports

8. KEY CONCLUSIONS

The current spread of human activities, such as the inadequate methods of liquid waste disposal point to an ignored vision for the city's growth. These activities raise serious risks of groundwater contamination which may have far-reaching public health implications for the current and future city populations.