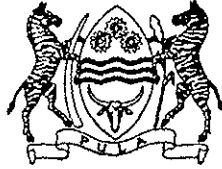


BGS — Library services

Serial no: *kw9692* B

P'copy		Display	
Map Lib.	/	Minerals	/
Cat.	/		/

Circulate to *copy B* Return to *Library*



REPUBLIC OF BOTSWANA

GEOLOGICAL SURVEY DEPARTMENT

(Director: T.P. Machacha)

BULLETIN SERIES

Bulletin 33

THE GEOLOGY OF THE KANYE AREA

An explanation of quarter degree sheet 2425C

by

D.T. ALDISS, A.R. TOMBALE, R.M.B. MAPEO AND M. CHIEPE

with a contribution by J.M. Barton, Jr.

1989

*Published by the Director Geological Survey Department,
Private Bag 14, Lobatse, Botswana*

*with the authority of the Ministry of Mineral Resources and Water Affairs
Republic of Botswana*

BRITISH GEOLOGICAL SURVEY



78 0235628 4

ISBN 99912-1-024-5

PRINTED BY THE GOVERNMENT PRINTER, GABORONE, BOTSWANA

4.7.4 Opal

A raft of highly silicified dolomite occurs within dolerite southeast of Moshaneng. This contains an optically anomalous type of ferruginous opal, replacing both dolomite and asbestos (Poldervaart 1949, 1950c, 1953). This mineralogical curiosity seems to have no economic significance.

4.8 Water resources

Surface water in the Kanye area is nearly all ephemeral. There are four dams with perennial water: just north of Kanye (the Bathoen Dam) between Kanye and Moshaneng (Gampudi Dam), at Moshaneng asbestos mine, and at Mosopa. There are also numerous small dams with seasonal capacity scattered throughout the agricultural lands. These dams are mostly used to supply stock, with minor domestic use, but the Bathoen Dam and Gampudi Dam are also used for irrigation schemes, and the Moshaneng mine dam serves a quicklime plant (Section 4.6.4). There are also hand-dug wells throughout the area, often in sand-rivers, which are used for domestic supply and to water stock.

All the villages within the Kanye area are supplied with water from the numerous boreholes. In addition, some of the cattleposts and arable agricultural areas in the west have their own boreholes. Groundwater supplies in the Kanye area depend almost entirely on the capacity of fractured aquifers. The Transvaal Supergroup dolomites, and the Waterberg Group sandstones are the most productive formations in southeast Botswana as a whole, although their potential in the Kanye area has not yet been fully determined. The mainly unconfined aquifers in these units can yield good water supplies with low dissolved mineral content. Water supplies from the Transvaal dolomites are enhanced by the presence of fracture zones which have been widened by solution of the wall-rock. Fractures and weathered zones in the Gaborone Granite and the Kanye Volcanic Formation tend to host small, unconfined aquifers. The yield from all these formations decreases to the west, as increasing cover of the Kalahari beds tends to reduce recharge in the older rocks (de Vries 1985).

A small subcrop of Karoo sediments, possibly including sandstones, might be present in the extreme northwest corner of the area (Sections 3.11). Such sandstones can have intergranular as well as fracture permeability, and can host high-yielding aquifers (de Vries 1985).

Information on boreholes in the Kanye area is listed by Green (1949a) and Wilson (1958, 1960, 1961). Investigations of water supplies and for borehole siting in various parts of the Kanye area were carried out by Jessie (1972), Hastings (1962), Wilson (1958, 1959, 1960a, 1960b) and by Loxton Hunting and Associates (1976). Investigations of the hydrogeology of various part of the Kanye area were performed by Houston (1971, 1972a, 1972b, 1973), Motsete and Houston (1972), and by BRGM (1986).

A survey of possible dam sites in southeastern Botswana was carried out by Sir Alexander Gibb and Partners (1976). They identified such a site on the Tsube Riber, at 24° 49'S, 23° 18'E but this was not investigated in detail.