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GEOLOGY AND MINERAL POTENTIAL OF PORTION 6 OF THE FARM STEENKAMPS PAN NUMBER 419 AND SURROUNDING AREA IN THE SIYANDA DISTRICT NEAR UPINGTON, NORTHERN CAPE PROVINCE

This short report describes the geology and mineral potential of a proposed site for a vehicle test facility near Upington in the Northern Cape Province. This site is located on Portion 6 of the Farm Steenkamps Pan number 419, approximately 35 km northeast of Upington (Fig. 1). The report includes the geology and mineral potential of the surrounding area and confirmation that no dolomitic deposits are to be found at this site. The Council for Geoscience provides this response in order to assist Webber Wentzel meet the requirements of regulations under Section 53 of the Mineral and Petroleum Resources Development Act of 2002.

The geology of the proposed site and surrounding area was obtained from the 1:250 000 - scale 2820 Upington geological map (Geological Survey, 1988) and explanation (Moen, 2007) and the 1:250 000 - scale 2820 Upington metallogenic map (Council for Geoscience, 1997). Information on the minerals and possible mineral potential was derived from this metallogenic map, together with the map explanation (Du Toit, 1998). The Council for Geoscience's mineral database, SAMINDABA, which documents all known mineral deposits in South Africa, was also perused for information on any mineral deposits present on the site and surrounding area. A geological map covering the proposed site and surrounding area as well as any mineral deposits present was compiled from the 1:250 000 - scale 2820 Upington metallogenic map (Council for Geoscience, 1997).

Geologically, Portion 6 of the Farm Steenkamps Pan number 419 is almost entirely covered with reddish-brown windblown sand of the Gordonia Formation, which forms a series of northwest-trending dunes. Near the southeastern corner, exposures of the Blaauwbosch Granite are present (Fig. 1), which take the form of a fine-grained granite porphyry (Moen, 2007). In the surrounding area, the same windblown sand of the Gordonia Formation is present and is predominant north of the proposed site. However, a variety of rocks assigned to two formations of the Namaqua Metamorphic Province, five formations of the Koras Group and granite porphyry of the Blaauwbosch Granite, which intruded the Koras Group about 1100 million years ago (Du Toit, 1998), form inliers that emerge from beneath the windblown sand cover (Fig. 1). Calcrete overlying these rocks is exposed in places (Moen, 2007). The two formations of the Namaqua Metamorphic Province are named the Dagbreek and Leerkrans Formations. The Dagbreek Formation consist of quartzite and schist, whereas the Leerkrans Formation consists of gritty feldspathic schist on Uap 418 and phyllite, schist and talc schist on Steenkamps Pan 419 (Fig. 1; Moen, 2007). The five formations of the Koras Group are from base upwards, the Rusplaas, Rouxville, Leeuwdraai, Adeisestad and Kalkpunt Formations. The Rusplaas Formation occurs on the farms Steenkamps Pan 419 and Duiker Rand 415, where it comprises quartzite and minor conglomerate (Moen, 2007). The Rouxville Formation is present on the northern part of the farm Steenkamps Pan 419 (Fig. 1) and

consists of fine-grained, non-amygdaloidal lava and some breccia. The Leeuwdraai Formation is exposed over a large area southeast of Portion 6 of Steenkamps Pan 419 (Fig. 1) and comprises fine-grained felsic lava and porphyry (Moen, 2007). The Adeisestad Formation is exposed southeast of the Leeuwdraai Formation, which it overlies (Fig. 1). It consists of amygdaloidal basic lava, volcanic breccia and tuffaceous rocks. The overlying Kalkpunt Formation is present on the farm Adeisestad 409 (Fig. 1) and comprises sandstone, conglomerate and minor shale. Fine-grained granite porphyry of the younger Blaauwbosch Granite occurs on the farms Steenkamps Pan 419 and Uap 418 (Fig. 1). Calcrete probably representative of the Quaternary Mokalanen Formation (Moen, 2007), is present on the farms Steenkamps Pan 419, Geelkop Pan A 297, Uap 418, Kameel Poort 414 and Uizip 413 (Fig.1).

There is no record of any mineral deposits being present on Portion 6 of the Farm Steenkamps Pan number 419 (Fig. 1). However, deposits of talc, kieselguhr and copper are present in the surrounding area up to a distance of 8 km from the borders of Portion 6 (Fig. 1). An occurrence of talc occurs in the Leerkrans Formation on Steenkamps Pan 419, approximately 2.6 km west of the boundary of Portion 6 (Fig. 1). The locality is at co-ordinates: Latitude 28°10'42"S; Longitude 21°26'38"E (Du Toit, 1998). The talc is hosted by schist (Moen, 2007) and although some prospecting excavations were completed, the economic potential is low and mining is not likely to take place (Du Toit, 1998). Kieselguhr is located at co-ordinates: Latitude 28°14'00"S; Longitude 21°27'30"E (Du Toit, 1998), some 3.5 km west of the boundary of Portion 6 (Fig. 1). Kieselguhr consists of a light-weight, soft, pale-coloured, chalky sediment, composed mainly of the opaline hollow shells of diatoms and is principally used as a filter aid in South Africa (Strydom, 1998). According to the SAMINDABA database, the deposit consists of diatomaceous limestone that partly fills a hollow in red sandstone of the Koras Group (formation name unknown). It is capped by hard calcrete and is sand-covered. No prospecting has taken place and the size and quality of the deposit is unknown. Detailed prospecting would be needed in order to ascertain the economic potential of this deposit. Copper is located at co-ordinates: Latitude 28°11'48"S; Longitude 21°23'55"E (Du Toit, 1998), some 7.5 km west of the boundary of Portion 6 (Fig. 1). It is associated with red beds of the Rusplaas Formation, but no indication of size or grade is given.

It can be concluded that the proposed site for a vehicle test facility on Portion 6 of the farm Steenkamps Pan 419 has a very low mineral potential. Although deposits of talc, kieselguhr and copper are present in the surrounding area, the economic potential is unknown due to a lack of adequate prospecting. There are no dolomitic formations on this site nor in the surrounding area.

References

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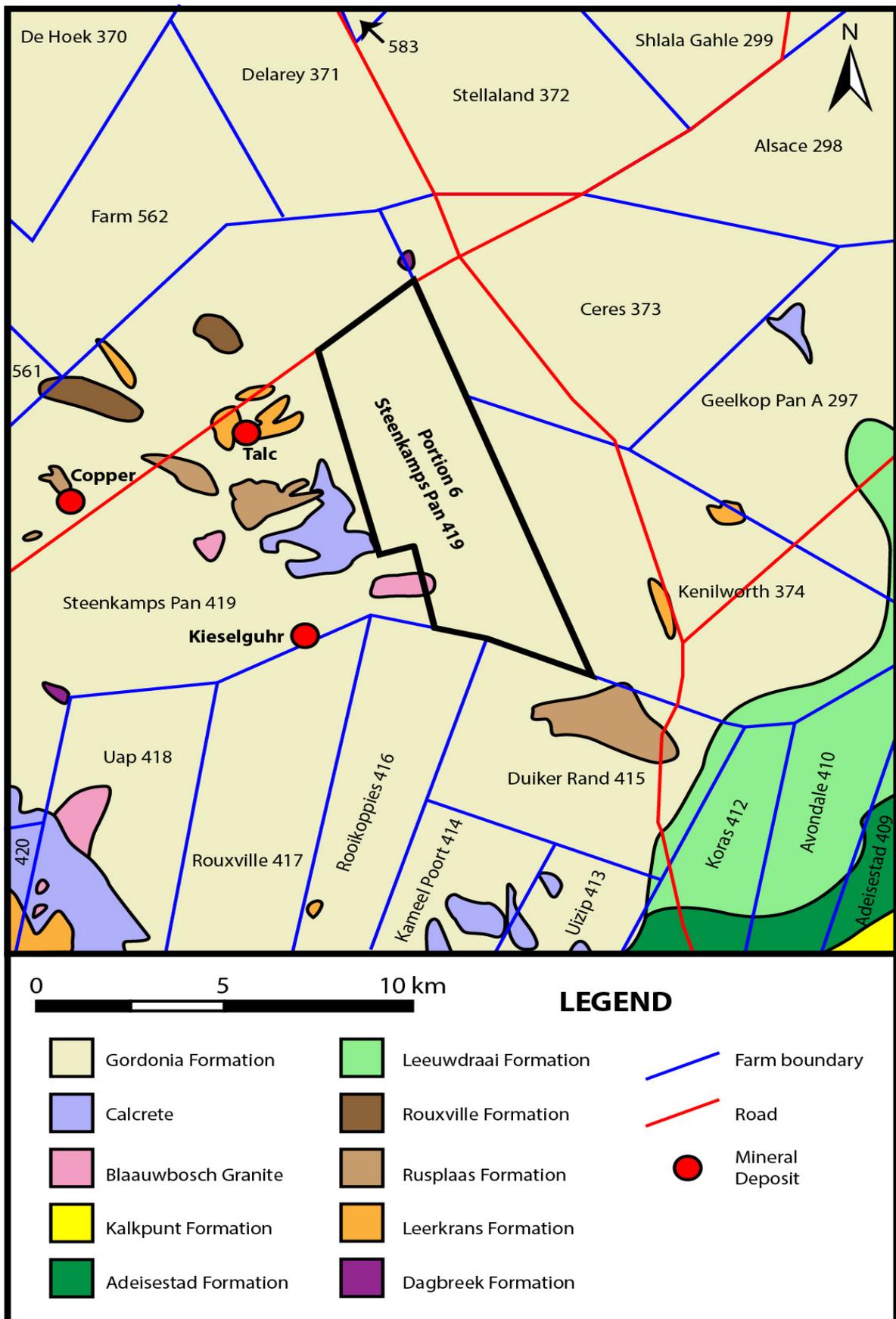


Figure 1: Geological map of Portion 6 of the farm Steenkamps Pan 419 and the surrounding area showing location of mineral deposits, farm boundaries and roads.

Author:

A handwritten signature in black ink that reads "D. I. Cole". The signature is written in a cursive style with a large, stylized 'C'.

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