

**EKURHULENI METROPOLITAN MUNICIPALITY**

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DOLOMITE SPECIALIST CONSULTANTS**

**WORKS ORDER NO. 37**

**MAKAUSE INFORMAL SETTLEMENT, GERMISTON NORTH  
INTERIM SINKHOLE ASSESSMENT REPORT**

**M PLICHTA (PrEng)  
SENIOR ENGINEER**

**I KLEINHANS (PrSciNat)  
SENIOR ENGINEERING  
GEOLOGIST**

Prepared by

***Knight Piésold***  
CONSULTING

**Knight Piésold (Pty) Ltd**  
PO Box 72292  
LYNNWOOD RIDGE  
0040  
Tel: +27 12 348 9091  
Fax: +27 12 348 9065  
e-mail: [michaelp@kprsa.co.za](mailto:michaelp@kprsa.co.za)

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**EKURHULENI METROPOLITAN MUNICIPALITY  
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***INTERIM SINKHOLE ASSESSMENT REPORT***

**1. BACKGROUND AND SITE DESCRIPTION**

A sinkhole at the Makause Informal Settlement was reported to Mr Pieter Grobler of the Ekurhuleni Metropolitan Municipality (EMM) on 17 October 2007 by the EMM Housing Department Regional Executive Manager: Southern Region. The ownership of the property is uncertain and may be owned by either EMM or by a gold mining company.

The position of the reported sinkhole was recorded using a handheld GPS and is given below using the WGS 84 (South African) co-ordinate system:

| <b>Address</b>              | <b>Y (Lo 29)</b> | <b>X</b>  |
|-----------------------------|------------------|-----------|
| Makause informal settlement | 83 390           | 2 898 507 |

The site is situated in Germiston North between Pretoria Road, Main Reef Road and Stanley Street which occur to the north, south and east respectively. The site locality is shown in Figure 1 at the back of the report.

According to available information, the area is underlain by shale, quartzite and conglomerate of the Jeppetown Subgroup of the West Rand Group, Witwatersrand Supergroup and by quartzite and conglomerate of the Johannesburg Subgroup of the Central Rand Group, Witwatersrand Supergroup.

**2. SITE INSPECTION**

A site inspection was conducted on 24 October 2007 by Michael Plichta and Ilse Kleinmans from Knight Piésold and by Mr Gert Prinsloo from EMM (Alberton Housing Department). The community leader (Mr Michael Dzai – cellphone number 083 502 3863) was also present during the site visit. The affected area was evaluated to determine the extent of the problem and to provide further recommended actions. Photos are given in Appendix A at the back of the report. The following was observed:

- An opening measuring approximately 4m by 2m was observed at the ground surface. The opening is an old mine shaft that has a depth of 80m according to the community leader.
- According to the community leader, a smaller opening had formed at the same position above the mine shaft approximately 3 years ago. The informal settlers then filled the hole with building rubble and rubbish. Following the heavy rainfall in early October, the opening had re-appeared on 10 October 2007 up to its present size.

- The opening has been fenced off from all four sides and the community leader has informed the local residents about the danger posed by the mine shaft to their safety.
- A smaller hole (0,75m diameter) is situated approximately 4m north-east of the mine shaft. According to the community leader, a woman fell down the hole last year and was killed. The hole opening has since been fenced off and covered by a wooden pallet.

### **3. SINKHOLE ASSESSMENT**

The site is not underlain by dolomite and the sinkhole that has been reported to EMM is an opening at the ground surface that leads to a deep sub-vertical mine shaft.

The smaller opening and the larger opening are connected together and lead to the mine shaft which has a depth of approximately 80m.

The upper 10m of the mine shaft up to the ground surface was observed to comprise residual shale and quartzite which appears to be underlain by quartzite rock.

### **4. RECOMMENDED REMEDIAL ACTION**

The exposed mine shaft at the Makause Informal Settlement poses a very serious danger to the lives of the informal settlers. Despite the affected area being fenced off, there is still a real danger that children or animals could gain access to the opening at the ground surface and fall down the mine shaft inadvertently.

The Council for Geoscience (CGS) is currently appointed by the Department of Mineral and Energy Affairs (DME) to rehabilitate all open shaft areas. The position of the new opening was given through to Mr. G. Heath of CGS, who will follow up the matter with DME. It is provisionally recommended that an area of 30m radius around the opening be fenced off with a 1,8m high fence to prevent access, and a concrete cap is used to seal the mine shaft but this will have to be determined by the responsible parties.

**APPENDIX A**

***SITE PHOTOS***



**Plate 1.** Opening to the mine shaft which measures 4m x 2m.



**Plate 2.** View inside the opening to the sub-vertical mine shaft.