



A 21<sup>st</sup> Century Research Institute at Wits

# The Evolutionary Studies Institute



Private Bag 3, Wits, 2050, South Africa • Telephone +27 11 717 6682 • [esi.research@wits.ac.za](mailto:esi.research@wits.ac.za)  
University of the Witwatersrand, Johannesburg

Email: [bruce.rubidge@wits.ac.za](mailto:bruce.rubidge@wits.ac.za)

31 January 2014

Mr Darcy Bower  
Blue Limit Trading 26 (Pty) Ltd  
P.O. Box 3393,  
Honeydew,  
2040

Contact person  
Mr Willem Hutten  
E-Mail: [whutten44@gmail.com](mailto:whutten44@gmail.com)

Dear Mr Hutten,

## **Palaeontological Desktop Report – Drilling programme Tsansabane local Municipality**

As requested, herewith a Desktop Palaeontological Impact Assessment with regard to the construction of the proposed core drilling programme on the farms Plaas 438 and 588 in the a mine in the Tsansabane local Municipality Hotazel area, Northern Cape Province.

Yours sincerely

**Bruce Rubidge** PhD, FGSSA, FRSSA, Pr Sci Nat

ESI

**PALAEONTOLOGICAL DESKTOP STUDY  
BLUE LIMIT TRADING 26 (PTY) LTD  
TSANSABANE LOCAL MUNICIPALITY, NORTHERN CAPE PROVINCE**

**AUTHOR:**

Professor Bruce Rubidge  
PO Box 85346  
Emmarentia

Tel: 072 575 7752

Email: [bruce.rubidge@wits.ac.za](mailto:bruce.rubidge@wits.ac.za)

**COMPILED FOR:**

Blue Limit Trading 26 (Pty) Ltd  
P.O. Box 3393,  
Honeydew,  
2040

Contact person: Mr Willem Hutten

E-Mail: [whutten44@gmail.com](mailto:whutten44@gmail.com)

Tel No.: +27 11 7935554

Cell No: 0825787307

Fax No: +27 11 7935554

**DATE: 31 January 2014**

## EXECUTIVE SUMMARY

A desktop Palaeontological Impact Assessment was undertaken for Blue Limit Trading 26 (Pty) Ltd to determine the possibility of the presence of palaeontological resources on the properties Plaas 438 and 588, northeast of Postmasburg in the Northern Cape Province. The proposed development is activity is to undertake drilling for core for mineral exploration

Most of the surface extent of the study area is covered by wind-blown deposits of the Quaternary Kalahari Formation, but judging from the geological map the area is underlain by rocks of the Precambrian Transvaal Supergroup which have the potential to host fossil stromatolites but these are not exposed on the surface.

The unconsolidated sediments of the Kalahari Formation could potentially also host fossils, but as these are unconsolidated deposits this improbable. It is thus unlikely that the proposed drilling development will have a detrimental effect on fossil heritage but there is always a possibility.

If fossils are exposed in the course of construction and drilling activities in the process of prospecting a qualified palaeontologist must be contacted to assess the exposure for fossils so that the necessary rescue operations are implemented.

## TABLE OF CONTENTS

Background of development .....	4
Details of the study area .....	4
Geological Setting .....	5
Palaeontological Heritage.....	6
Recommendation.....	6
Conclusions.....	6
Bibliography.....	7

## REPORT

### Background information of the development

This desktop report is part of a Heritage Impact Assessment to determine the effect that the drilling programmes of Blue Limit Trading 26 (Pty) Ltd on the properties Plaas 438 and 588 in the Tsantsabane Local District Municipality in the Slyanda District Municipality in the Northern Cape Province will have on palaeontological heritage.

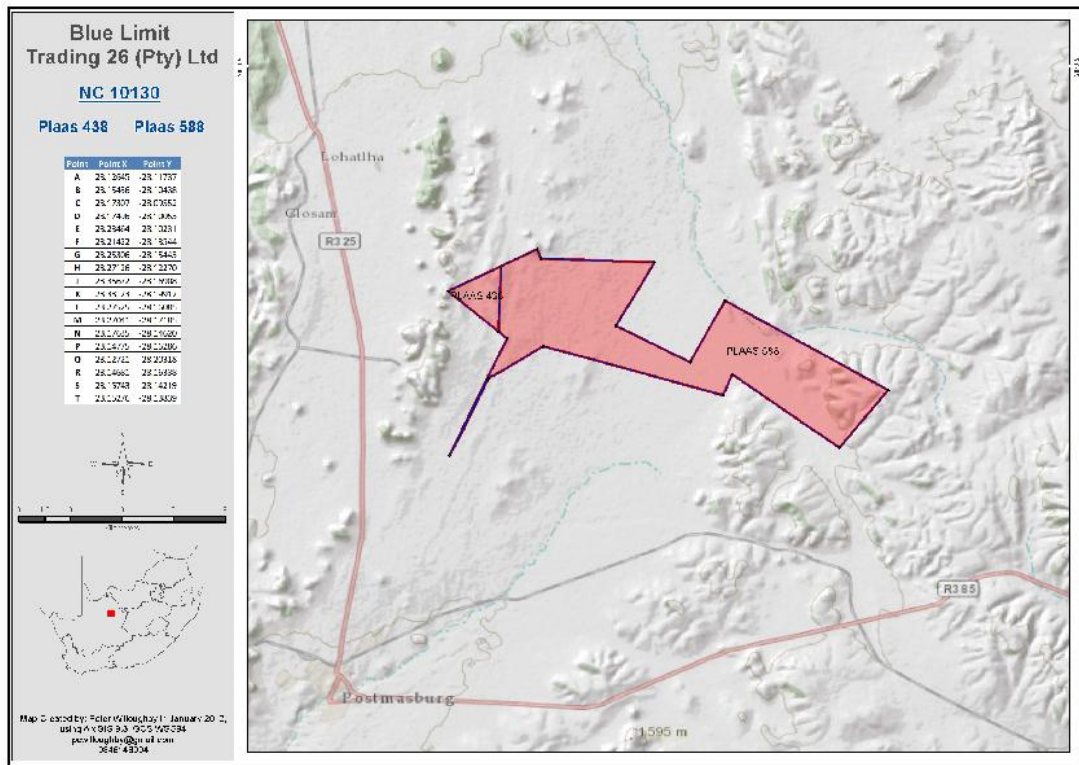


Figure 1: Map showing the site of Plaas 438 and 588 in the Tsantsabane Local District Municipality in the Northern Cape Province.

The study was commissioned by Blue Limit Trading 26 (Pty) Ltd, Johannesburg and I was asked to provide a desktop assessment of the risk that the proposed programme will have on the palaeontological heritage.

### Details of the study area

The study area of the proposed drilling programme of Blue Limit Trading 26 (Pty) Ltd is situated on the properties Plaas 438 and 588 northeast of Postmasburg, west of the R 325 highway between Postmasburg and Sishen in the

Northern Cape Province. The study area (Figure 1), and is covered by the 1:50 000 topographical map, sheet 2822AA and 2822AB. The surface extent of the property covers an area of some 8807Ha.

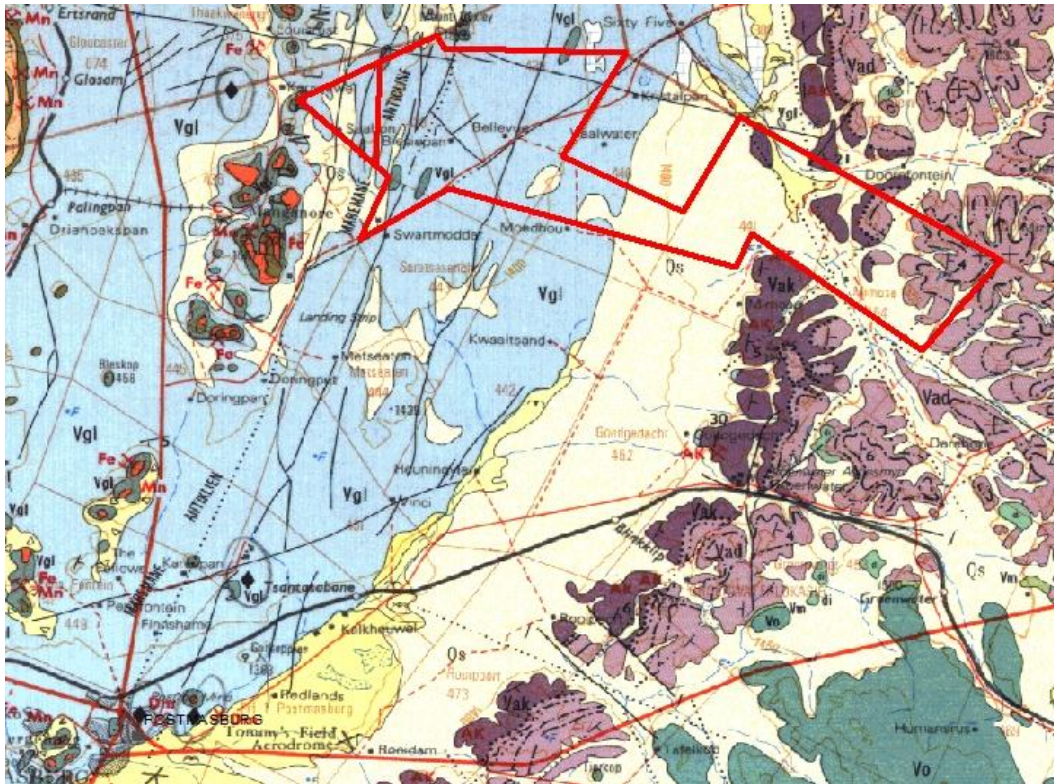


Figure 2: 1: 250 000 scale geological map showing the position of the farms Plaas 438 and 588 in relation to the regional geology.

### Geological Setting

Referral to the geological map (1979 sheet Postmasburg 2822; 1:250 000 series) indicates that much of the study area is covered by unconsolidated windblown sand of the Quaternary Kalahari Formation and the entire study area is underlain by the Precambrian Transvaal Supergroup with the western side underlain by the Campbell Rand Subgroup, and the more easterly area by the Asbestos Hills Subgroup. The entire Plaas 438 and the western side of Plaas 588 are situated on rocks of the Campbell Rand Subgroup comprising cherts, shales and mainly dolomites and carbonate rocks with stromatolitic structures. The eastern side of Plaas 588 is situated on rocks of the Asbestos Hills Subgroup comprising largely banded ironstone formation.

## **Palaeontological Heritage**

Fossilised stromatolites are well known from the Precambrian rocks of the Campbell Rand Subgroup of the Transvaal Supergroup. The unconsolidated Quaternary sediments of the Kalahari Formation possibly have the potential to preserve fossils of animals and plants, but this is unlikely if they are present their occurrence will be sporadic.

## **Recommendation**

The Transvaal Supergroup rocks have the potential to preserve fossil stromatolites but these are not exposed in the study area. The sedimentary deposits of the Kalahari Formation have the potential to host fossils, but this is very unlikely. It is thus unlikely that the proposed drilling programme will be detrimental to palaeontological heritage.

There is a slight possibility that if sinkholes present in the dolomites and were filled with younger sediment fossils could be present. If drilling activities should expose fossils in the in the unconsolidated sediments of the Kalahari Formation or in possible sediment filled sinkholes in dolomites of the Campbell Rand Subgroup, it will create a unique opportunity to explore the area for fossils. It is thus recommended that, should fossils be exposed, a qualified palaeontologist be contacted to assess the exposure for fossils before further development takes place so that the necessary rescue operations are implemented. Depending on the nature of the fossils discovered this could entail excavation and removal to a registered palaeontological museum collection. A list of professional palaeontologists is available from South African Heritage Resources Agency (SAHRA).

## **Conclusions**

The exploration drilling programme of Blue Limit Trading 26 (Pty) Ltd on the properties Plaas 438 and 588 in the Tsantsabane Local District Municipality will cover Precambrian rocks of the Transvaal Supergroup and Quaternary aged unconsolidated sediments of the Kalahari Formation. There is only a very slight possibility that the sediments Kalahari Formation could contain fossil material or in potential sinkhole-filled deposits. Should fossils be exposed in the course of drilling activities this may provide a unique opportunity to find fossils in sedimentary successions which have not yet yielded fossils. If fossils are exposed as a result of drilling activities a qualified palaeontologist must be contacted to assess the exposure for fossils so that the necessary rescue operations are implemented.

## **Bibliography**

Almond J.E., de Klerk B, and Gess R.W. (in prep). Palaeontological heritage of the Eastern Cape. SAHRA technical report.

Eriksson PG., Altermann W. and Hartzler FJ. 2006. The Transvaal Supergroup and its precursors. *In: Johnson MR, Anhaeusser and Thomas RJ (Eds). The Geology of South Africa.* Geological Society of South Africa, Johannesburg/Council for Geoscience, Pretoria. pp. 237-260.

Mac Rae C. 1999. *Life etched in stone: fossils of South Africa.* The Geological Society of South Africa, Johannesburg, pp 305.

McCarthy, T.S. and Rubidge, B.S. 2005. *The story of Earth and Life – a southern African perspective on the 4.6 billion year journey.* Struik Publishers, Cape Town. pp 333.

Partridge TC, Botha GA, and Haddon IG. 2006. Cenozoic deposits of the interior. *In: Johnson MR, Anhaeusser and Thomas RJ (Eds). The Geology of South Africa.* Geological Society of South Africa, Johannesburg/Council for Geoscience, Pretoria. pp. 585-604.