

EMZINONI TOWNSHIP DEVELOPMENT: DESK-TOP PALAEOLOGY REPORT

FOR

Siyabonga Dlamini

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by

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Declaration of Independence

This report has been compiled by Dr Alan Smith (Pr. Sc. Nat.) of Alan Smith Consulting, Durban. The views expressed in this report are entirely those of the author, if not then the source has been duly acknowledged. No other interest was displayed during the decision making process for the Project.

Specialist: Dr Alan Smith

Signature:

A handwritten signature in black ink, appearing to be 'AS', written over a light grey horizontal line.

EXECUTIVE SUMMARY

The Sahris Palaeosensitivity map shows the coding colour to be dominated by grey, with only minor green. Green requires a desk-top palaeontological assessment only, whereas grey requires no palaeontological work.

The grey is weathered Karoo Dolerite. Dolerite is an igneous intrusive rock and not fossiliferous.

The green represents alluvium. This is a drainage line flowing over dolerite and is unlikely to contain fossils.

No further palaeontological investigation is required.

1. BACKGROUND AND PROPOSED PROJECT

The Govan Mbeki Local Municipality is proposing to establish a new township. This will be constructed in two phases with 2970 stands. Phase 1 covers 245 ha and phase 2 will cover 337 ha within the Emzinoni Village. This new township layout will consist of 637 low density residential units, 1554 low-medium density residential units, 3489 medium density residential units, 3 high density units, 3 mixed-use units, 29 public open space, 15 institutional units, the streets and other bulk services. This new residential area will be located on a portion of the remainder of Portion 6 of the farm Blesbokspruit 150 IS in the Govan Mbeki Local Municipality of Mpumalanga Province (Figure 1).

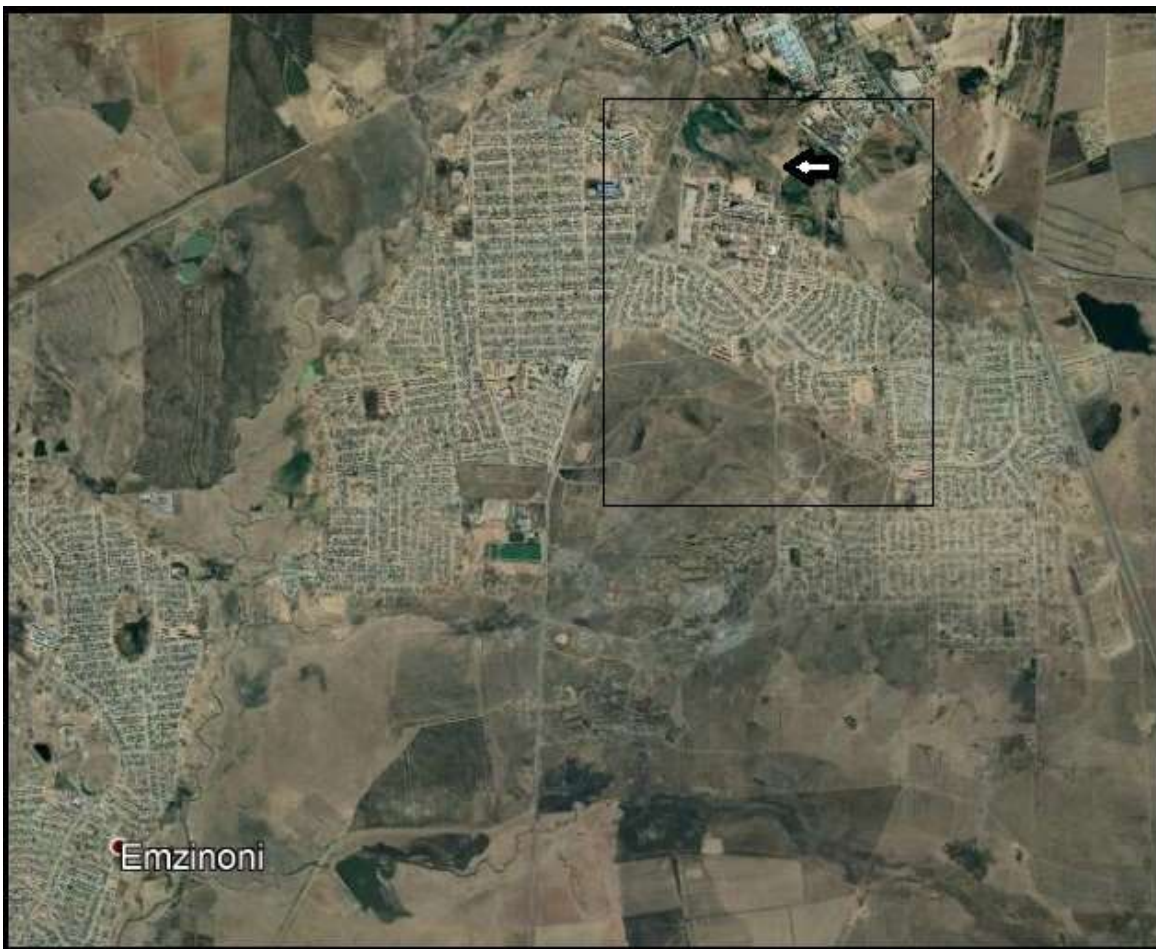


Figure 1: Location map of proposed Emzinoni Township Development. The area in question is boxed. An adjacent drainage line is arrowed. Source map: Google Earth.

2. GEOLOGY

Perusal of the East Rand (2628) 1: 250 000 geological map indicates that there is only Karoo Dolerite and alluvium at this location (Figure 2).



Figure 2: Extract from the East Rand (2628) 1: 250 000 scale Geological Map. Red is dolerite and yellow is alluvium.

Karoo Dolerite

The Karoo Dolerite is an intrusive igneous rock emplaced 184 million years ago (Hastie et al. 2014). This was part of the Karoo volcanism event which was the prelude to the break-up of the Gondwana Supercontinent into the southern hemisphere continents we know today. The Karoo Dolerite rocks present in this area were emplaced as a sill.

Alluvium

The alluvium comprises gravels and sands which have been deposited along a stream drainage line. Most of this material will have been sourced from dolerite. It is possible that paleontological material may have been brought in from elsewhere, consequently a “Chance Find Protocol” has been inserted (see Section 4).

3. PALAEOLOGY

The Karoo Dolerite is an igneous intrusive rock (colour-coded grey in Figure 3) and by definition cannot be fossiliferous. It is possible that palaeontological material may have been brought in from elsewhere and been deposited along the drainage line (Figure 3), consequently a “Chance Find Protocol” has been inserted (see Section 4).



Figure 3: Extract from SAHRIS PalaeoSensitivity Map showing a zoomed-in section of the Emzisoni development area (boxed). The bulk of the area is grey (Dolerite) with alluvium in green. According to the Sahriss Palaeosensitivity map only a Desk-Top PIA is required.

4. REFERENCES

East Rand (2628) 1: 250 000 Geological Map, Council for Geosciences, Pretoria.

Hastie, WW; Watkeys, MK; Aubourg, C (2014). Magma flow in dyke swarms of the Karoo LIP: Implications for the mantle plume hypothesis. *Gondwana Research* 25 (2014) 736–755.

<https://sahris.sahra.org.za/map/palaeo>

5. DETAILS OF SPECIALIST

Dr Alan Smith

Private Consultant: *Alan Smith Consulting, 29 Brown's Grove, Sherwood, Durban, 4091*

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Honorary Research Fellow: *Discipline of Geology, School of Agriculture, Earth and Environmental Sciences, University of KwaZulu-Natal, Durban.*

Role: Specialist Palaeontological Report production

Expertise of the specialist:

- PhD in Geology (University of KwaZulu-Natal), Pr. Sc. Nat., I.A.H.S.
- Expert in Vryheid Formation (Ecca Group) in northern KZN, this having been the subject of PhD.
- Scientific Research experience includes: Fluvial geomorphology, palaeoflood hydrology, Cretaceous deposits.
- Experience includes understanding Earth Surface Processes in both fluvial and coastal environments (modern & ancient).
- Alan has published in both national and international, peer-reviewed journals. He has published more than 50 journal articles with +400 citations (detailed CV available on request).
- Attended and presented scientific papers and posters at numerous international and local conferences (UK, Canada, South Africa) and is actively involved in research.

Selected recent palaeo-related work includes:

- Desktop PIA: Proposed middle income housing units on Portion 23 of Farm Lot H Weston 13026, Bruntville, Mpofana Local Municipality. Client: UMLANDO.
- Desktop PIA: Proposed ByPass Pipeline for Ulundi bulk water pipeline upgrade. Client: UMLANDO.
- Fieldwork PIA: Bhekuzulu Epangweni KZN water reticulation project, Cathkin Park. Client: Mike Webster, HSG Attorneys.
- Desktop PIA: Zuka valley, Ballito. Client: Mike Webster, HSG Attorneys.
- Mevamhlope proposed quarry palaeontology report. Client: Enviropro.
- Desktop PIA: Proposed Lovu Desalination site. Client: eThembeni Cultural Heritage.
- Desktop PIA: Tinley Manor phase 2 North & South banks: eThembeni Cultural Heritage
- Desktop PIA: Tongaat. Client: eThembeni Cultural Heritage.

- Palaeontological Assessment Reports (3) to Scatec Solar SA (Pty) Ltd on an Appraisal of Inferred Palaeontological Sensitivity for a Potential Photo Voltaic Park at (1) Farm Rooilyf near Groblershoop, N Cape; (2) Farm Riet Fountain No. Portions 1 and 6, 18km SE of De Aar, N Cape; and (3) Dreunberg, near Burgersdorp, Eastern Cape. Client: Sustainable Development Projects.