

Palaeontological Desktop Assessment of a proposed new Fish Farming Development on Plot 19 Klipview, Midvaal Local Municipality near Meyerton, Gauteng Province.

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22 November 2017

Summary

The study area lies within an outcrop area of the early Proterozoic Pretoria Subgroup, represented by the Timeball Hill Formation, considered to be of potentially high palaeontological sensitivity as stromatolitic fossil assemblages may be present in most of the outcrop areas of the unit. However, the site is mantled by palaeontologically insignificant and geologically recent residual soils, plus given the nature and relatively small scale of the development, potential impact on palaeontological heritage resources within the proposed 8ha footprint is considered low. It is recommended that the development may proceed without a phase 1 impact study, provided that any activity that will require > 1m deep x 1m² excavations into unweathered sedimentary bedrock within the proposed footprint will require once off monitoring by a professional palaeontologist during the construction phase of the development in case of chance exposure of stromatolite fossil remains, while such excavations are still open.

Introduction

The report is an assessment of potential palaeontological impact with regard to a proposed new 8 ha fish farming development on Plot 19 Klipview, Midvaal Local Municipality Meyerton-Gauteng Province. (**Fig. 1 & 2**).

Maps

1:50 000 scale topographic 2628AC Alberton

1:250 000 scale geological map 2626 Wes Rand

Site Coordinates: 26°28'22.87"S 28° 2'36.47"E

Methodology

The assessment was carried out in accordance with National Heritage Resources Act 25 of 1999 with the aim to assess the potential impact on palaeontological heritage resources that may result from the proposed development. The palaeontological significance of the affected areas were evaluated through a desktop study and carried out on the basis of existing field data, database information and published literature.

Assumptions and Limitations

The assessment provided within this report is based upon a desktop study without the benefit of a site visit. The presentation of geological units present within the study area is derived from the 1:1 000 000 scale map of South Africa and the 1:250 000 scale geological map 2628 East Rand, which may vary in their accuracy. It is also assumed, for the sake of prudence, that fossil remains are always uniformly distributed in fossil-bearing rock units, although in reality their distribution may vary significantly.

Background

As outlined on the 1:250 000 scale geological map 2628 East Rand, the study area is underlain by Precambrian sedimentary rocks of the early Proterozoic Timeball Hill Formation (*Vt*, Pretoria Group, Transvaal Supergroup) (**Fig. 3**). The Timeball Hill Formation is ascribed to a fluvio-deltaic basin-fill sedimentation system and is composed of lacustrine and fluvio-deltaic mudrocks, conglomerates, ferruginous quartzites and finely-laminated ferruginous shales with thin stromatolitic carbonate interbeds (Eriksson 1973; Erikson *et al.* 2006; Cateneu and Erikson 2002). There is currently no record of Quaternary vertebrate fossils or sites in the region and the likelihood of impact on such remains resulting from the proposed development is considered to be very low.

Impact Statement Recommendation

The Timeball Hill Formation is considered to be of potentially high palaeontological sensitivity as stromatolitic fossil assemblages may be present in most of the outcrop areas of the unit. However, the site is mantled by palaeontologically insignificant and geologically recent residual soils, plus given the nature and relatively small scale of the development, potential impact on palaeontological heritage resources within the proposed 8ha footprint is considered low. Palaeontologically sensitive cave breccias are not anticipated in the study

area, as opposed to the more cave-rich karst environment provided by the underlying Malmani dolomites (Chuniespoort Supergroup) outcropping further to the east and south. It is recommended that the development may proceed without a phase 1 impact study provided that any activity that will require > 1m deep x 1m² excavations into unweathered sedimentary bedrock within the proposed footprint will require once off monitoring by a professional palaeontologist during the construction phase of the development in case of chance exposure of stromatolite fossil remains, while such excavations are still open.

References

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- Eriksson, P.G., Altermann, W. & Hartzler, F.J. 2006. The Transvaal Supergroup and its precursors. In: Johnson, M.R., Anhaeusser, C.R. & Thomas, R.J. (Eds.) *The geology of South Africa*, pp. 237-260. Geological Society of South Africa, Marshalltown.
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- Truswell, J.F. and Erikson K.A. 1972. The morphology of stromatolites from the Transvaal dolomite north-west of Johannesburg, South Africa. *Transactions of the Geological Society of South Africa* 75: 99 – 110.
- SAHRIS PalaeoSensitivity Map 2017 (<http://www.sahra.org.za/sahris/map/palaeo>).

DECLARATION OF INDEPENDENCE

I, Lloyd Rossouw, declare that I act as an independent specialist consultant. I do not have or will not have any financial interest in the undertaking of the activity other than remuneration for work as stipulated in the terms of reference. I have no interest in secondary or downstream developments as a result of the authorization of this project.

A handwritten signature in black ink, appearing to read 'L Rossouw', written in a cursive style.

22 / 11 / 2017

Figures

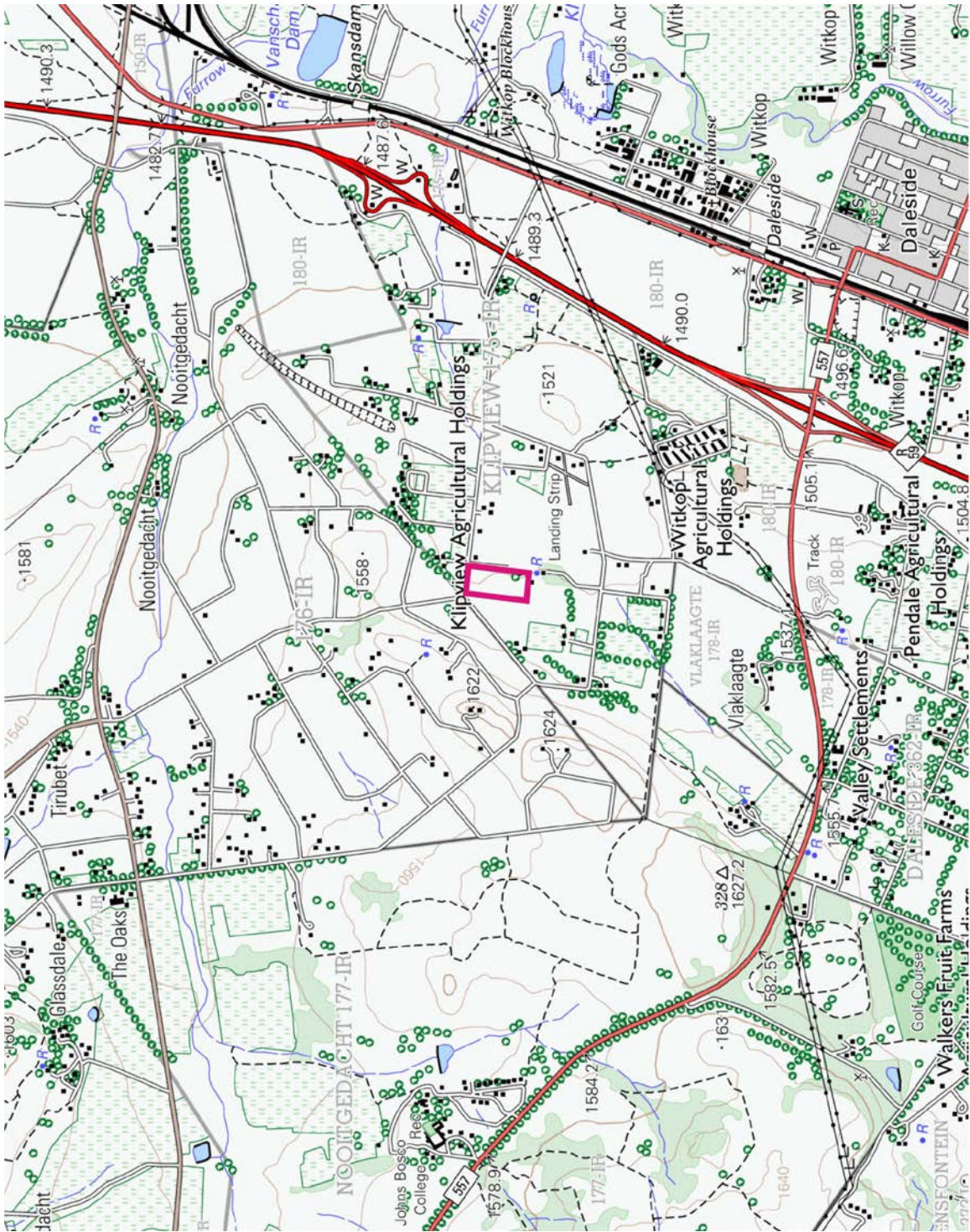


Figure 1. Map of the proposed development footprint (poertion of 1:50 000 scale topographic 2628AC Alberton).



Figure 2. Aerial view of the study area.

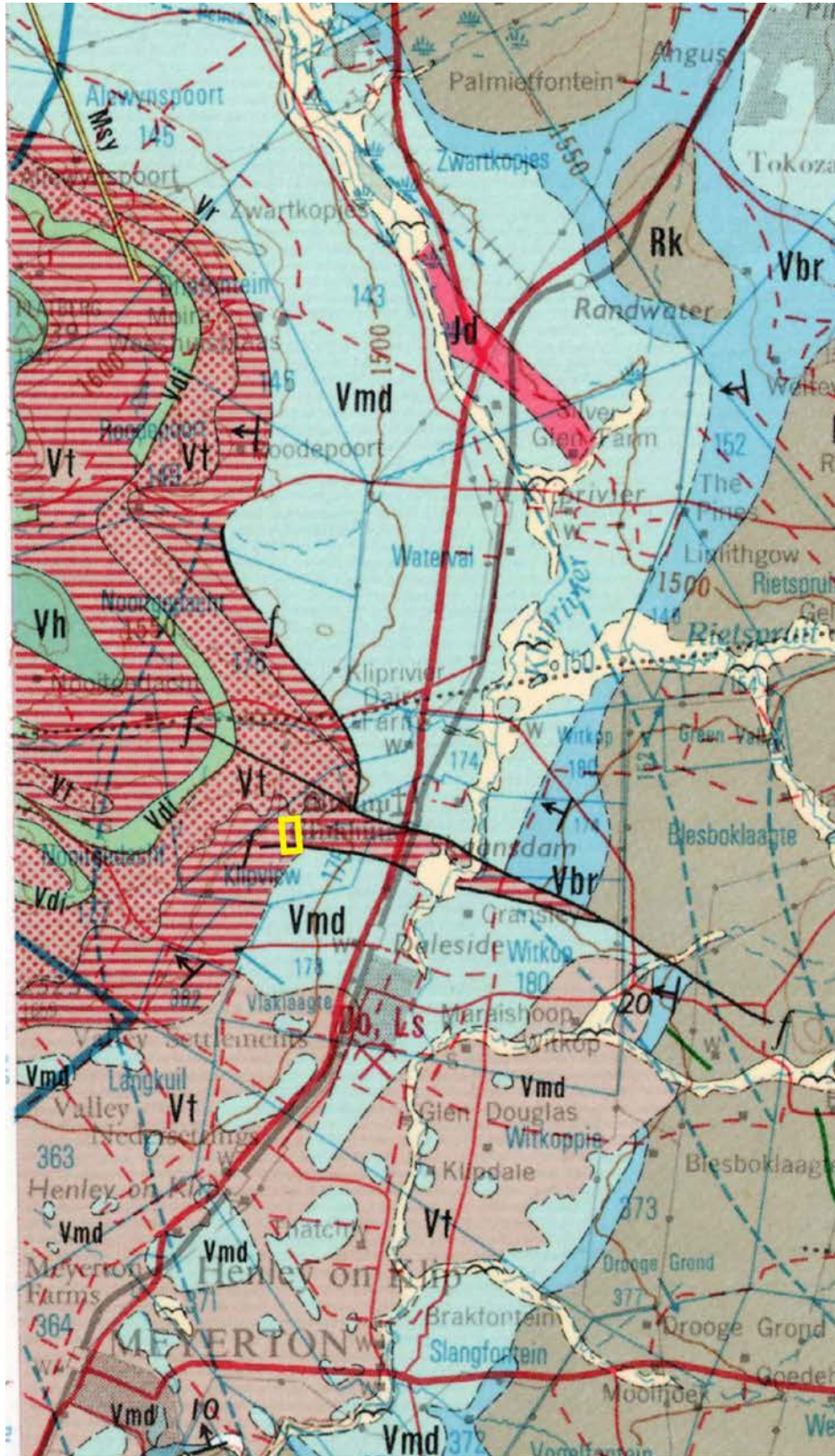


Figure 3. According to the 1:250 000 scale geological map 2628 East Rand, the study area is underlain by Precambrian sedimentary rocks of the early Proterozoic Transvaal Supergroup Timeball Hill Formation (*Vt*) represented by lacustrine and fluvio-deltaic mudrocks, conglomerates, ferruginous quartzites and finely-laminated ferruginous shales with thin stromatolitic carbonate interbeds.